

EXAMINING CLASSROOM-LEVEL INTERVENTIONS FOR STUDENTS WITH ADHD-
ASSOCIATED ACADEMIC ISSUES PRE-DIAGNOSIS

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Submitted to the graduate degree program in Educational Leadership and Policy Studies and the
Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the
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Abstract

This study examined the timing of teacher responses to student issues associated with Attention Deficit Hyperactivity Disorder (ADHD), pre-diagnosis, in the general education setting. Amid widespread concerns over an overextension of the medical model, this study examined educational treatment of ADHD-linked student issues isolated from other treatments, from discovery of need for intervention to possible referral for special education or medical testing. Data were collected in a large, high performing, suburban school district through semi-structured interviews of elementary and middle school teachers who served as key informants on the timing and context of key intervention milestones in a single school year. The findings of this study show that, while early intervention was common across participants, persistence in adapting interventions to increase personalization through an entire school year was characteristic of only the most successful. Teachers' self-reported process-oriented successes and outcomes-oriented successes were used to distinguish treatments and explore associations between persistent intervention timelines, collaborative approach, and dispositions toward challenges.

Keywords: ADHD treatment, intervention, overdiagnosis, prosocial motivation, intrinsic motivation, persistence

Acknowledgments

Successful completion of this work would not have been possible without the love, support, and encouragement of family and friends. My father always modeled hard work without complaint and "neither snow nor rain nor heat nor gloom of night" ever stayed him from the swift completion of his appointed rounds. While he did not get to see me start this path, his unspoken lessons and lasting confidence in me underlie each step I took to complete this work. Likewise, my mother's support and influence have been foundational and her optimistic spirit and tenacious resolve have continually inspired and resonate in me. I am especially grateful for the love and support of my partner and confidant, Samantha, whom has walked this path beside me in her own doctoral pursuit. Her perseverance has been inspirational and her support has been vital, especially when my tank was emptiest. Most importantly, I would like to acknowledge my biggest supporters and ultimate inspirations, my sons, Zane and Isaac. May our collective investment and sacrifices seed all our next adventures!

Table of Contents

Chapter 1: Introduction to the Study.....	1
Chapter 2: Literature Review	4
Historical Perspective and Prevalence of ADHD.....	4
Impairments and Symptoms of ADHD	5
Medicalization of ADHD	11
School-Based Interventions	12
Contributions of Study	14
The Problems with the Medical Model of Intervention	15
Growing Market of Unsatisfactory Treatment	16
The Role of Teachers and Context of Intervention	18
Knowledge, Attitudes, and Actions of Teachers	25
Summary	29
Chapter 3: Methods	31
Introduction	31
Empirical context	31
Plan	35
Measures, Protocols, and Observations	39
Analytical Plan	46
Summary	49
Chapter 4: Findings	50
Introduction	50
Overview of Findings.....	56
Discovery of Need to Intervene.....	59
Timing of Interventions.....	73
Collaborative, Consultative Problem-Solving Approach.....	84

Disposition Toward Student Behaviors and Control	95
Conclusion.....	105
Chapter 5: Discussion.....	107
Introduction	107
Discussion and Implications of Findings.....	108
Limitations of the Study.....	115
Recommendations for Future Research.....	116
Appendix A: Timeline of Key Intervention Milestones.....	119
REFERENCES.....	120

Chapter 1: Introduction to the Study

This study examines teacher responses to student issues associated with Attention Deficit Hyperactivity Disorder (ADHD) in the pre-diagnosis or un-medicated period, in terms of action taken and time taken to act. Since 1980, when ADHD was first included in the Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association, there has been an enormous increase in the diagnoses of and treatment for ADHD (Neufeld & Foy, 2006, p. 450). ADHD results from multiple interacting factors that are difficult to understand in isolation (Graham, 2008, p. 12; Purdie, Hattie, & Carroll, 2002, p. 62) and diagnosis relies almost exclusively on behavior observations and judgements by teachers and parents (Levy, Hay, McStephen, Wood, & Waldman, 1997). While the characteristic behaviors involve inattention, impulsivity, and over-activity (George J DuPaul & Stoner, 2014), they are most apparent and troublesome in school settings. The solution has primarily been medicalized (Neufeld & Foy, 2006, p. 464) without critically examining the contributing school context in natural school settings. With a growing concern over the potential for overdiagnosis of the disorder and the potential overuse of medication as the primary method of treatment (Purdie et al., 2002, p. 62; Scheffler, Hinshaw, Modrek, & Levine, 2007, pp. 454-455), schools and teachers must examine the contextual factors under their control and account for them in the rethinking and retooling of educational practices and program structures in 21st Century schools.

This study examines the specific teacher actions taken in response to troublesome student behaviors and academic issues related to ADHD and the time taken to respond to these behaviors before special education evaluation or medical intervention. Critical incident interviews were conducted in a large, high-performing suburban school district with teachers in elementary and middle schools whom have recently taught students exhibiting typical ADHD-associated

behaviors and academic issues. Teachers were located primarily through their response to an invitation email, sent from a within-district email address, requesting voluntary participation in a short data collection interview.

The study contributes to the discourse surrounding the ADHD epidemic, highlighting the dynamic process of intervention treatment in the *pre-diagnosis stage*. Research shows that school-based interventions can improve academic functioning, at least in the short-term (George J. DuPaul, 2012), which draws attention to a need for academic interventions to be utilized as early as possible for most students with ADHD (George J. DuPaul, 2012, p. 409). This study examines the timing of responses to those exhibiting ADHD-related behaviors and academic issues, along with the context in which interventions are developed, which the literature on ADHD intervention shows is possibly more important than the intervention itself (Miranda, Presentación, & Soriano, 2002, p. 547).

By examining classroom-level interventions in the pre-diagnosis or un-medicated stage, a better understanding of the contributing school-level factors, exclusive of any confounding medical intervention, can be achieved. This study first examines the medicalized solution to ADHD in order to frame the need for this study and others to look inward to classroom environments for solutions. An overreliance on the medical model of treatment is also exposed as a detriment that has likely undermined ongoing critical examination of contributing school factors and institutional practices in schools. This study then interviews teachers whom have recently interacted with students exhibiting ADHD-related behaviors and academic issues in order to gather contextual information regarding the problems experienced and subsequent actions taken. There is evidence that manipulating environmental events in the classroom, while also implementing timely and relevant interventions, lead to large changes in behavior and

increased learning among students with even the most severe symptoms of ADHD (George J DuPaul & Stoner, 2014). Therefore, this study seeks to understand teachers' manipulation of environmental events, their implementation and individualization of ADHD interventions, and the contextual factors at play, such as amount of time taken to intervene and the self-reported disposition of teachers, among others. While many children require a combination of behavioral interventions with psychostimulant medication for optimal treatment (George J DuPaul & Stoner, 2014, p. 270), this study looks beyond medical intervention to view the factors surrounding the treatment of students suffering symptoms of ADHD in the incubation stage of diagnosis.

Chapter 2: Literature Review

Historical Perspective and Prevalence of ADHD

Observations of ADHD-linked behaviors have been documented for over a hundred-twenty years, going at least as far back as the expansive Progressive Era of public education. In 1890, for instance, William James described a normal, but variant form of personality very similar to modern day descriptions of ADHD, stating, “There is a normal type of character, for example, in which impulses seem to discharge so promptly into movements that inhibitions get no time to arise. These are the ‘dare-devil’ and ‘mercurial’ temperaments, overflowing with animation, and fizzling with talk” (Neufeld & Foy, 2006, p. 453). By 1902, Dr. George Still from the Royal College of Physicians was one of the first to document the collection of symptoms associated with ADHD, noting they were unnatural compared to the behavior of “normal” children of the same age group (Graham, 2008, p. 10). Still described the children as having no general intellectual impairments, but suffering deficits in “inhibitory volition” or “a morbid defect of moral control” over their behavior. These flaws were also found in children with physiological brain-injuries and so a presumed connection between observed behavioral symptoms and known brain dysfunction was formed, leading to the modern concept of ADHD as a biological issue to be treated medically (Neufeld & Foy, 2006, pp. 453-454; Rafalovich, 2001, p. 94). By the 1990s, there was a substantial increase in the number of students diagnosed with ADHD, more than doubling in children and adolescents in the United States from 1990 to 1995, and yet again from 1995 to 2000 (Neufeld & Foy, 2006, p. 450).

While 12% to 22% of all children are said to be suffering from some sort of diagnosable mental, emotional, or behavioral disorder (Adelman & Taylor, 2000, p. 119), ADHD dominates these with about 5% of all children having the diagnosis (American Psychiatric et al., 2013;

George J. DuPaul, 2012). The prevalence is concentrated in school-aged children (Daley & Birchwood, 2010, p. 455) with 11% of children aged 4-17 years having been diagnosed with ADHD, comprising 6.4 million students in 2011 (CDC, 2017). A National Survey of Children's Health conducted in 2011-2012 by the CDC found that the average age of ADHD diagnosis was seven years of age, but earlier in children whose parents reported more severe symptoms. Most students with ADHD are placed in general education settings, while only 12% receive special education services (George J. DuPaul, 2012). The Individuals with Disabilities Education Act readily permits ADHD as a disability through categories like "specific learning disability" or "other health impaired"; but an authentic need must also be established for special services, usually by documentation of failed interventions implemented in general education programs (George J DuPaul & Stoner, 2014, pp. 246-247). More than half of all children diagnosed with ADHD are treated with psychotropic medication (George J DuPaul & Stoner, 2014, p. 4). Ninety percent of all children diagnosed with attention disorders are boys (Purdie et al., 2002, p. 63), whom have been historically overrepresented at a ratio of approximately 3:1 on average (Barkley, 1997, p. 65).

Impairments and Symptoms of ADHD

The essential impairment in ADHD is believed to be a deficit in response inhibition that leads to secondary impairments in the executive neuropsychological functions of the brain, including working memory, self-regulation of affect-motivation-arousal, internalization of speech, and behavioral analysis and synthesis (Barkley, 1997, p. 67; Daley & Birchwood, 2010, p. 459). These four neuropsychological abilities are partially dependent on inhibition for their effective execution and impairments here, as with ADHD, lead to decreased control of motor behavior. This often creates the appearance of poor sustained attention in those with ADHD, but

the problem is better described as poor tracking of obedience of behavior (Barkley, 1997).

Behavioral control involves management of internally represented information, which comes from the executive functioning of the brain. Control starts with inhibition of the pivotal, initial response to a stimulus event that has immediate positive or negative reinforcement. Further stopping of an ongoing response allows delay in the decision to respond and, lastly, subsequent interference control protects this period of delay and the self-directed responses from disruption, allowing execution of goal-directed responses generated from those self-directed actions.

Barkley's research suggests that all three inhibitory activities are impaired in ADHD and are likely the result of many factors including the development of neural networks in the prefrontal lobes of the brain (1997, p. 69). Barkley also argues that the ultimate purpose of these executive functions of the brain are to alter the potential consequences related to a response. They are influenced by the successful maximizing of net consequences of behavior over the long-term, by the socialization of the child, and by ongoing reinforcement of the individual for using self-regulatory actions (Barkley, 1997, p. 69).

From an educational perspective, ADHD symptoms are centered on a failure to function appropriately in the classroom. ADHD "is associated with greater risks for low academic achievement, poor school performance, grade retention, school suspensions, expulsions, poor peer and family relations, anxiety and depression, aggression, conduct problems and delinquency, early substance experimentation and abuse, driving accidents and speeding violations, as well as difficulties in social relationships, marriage and employment" (Neufeld & Foy, 2006, p. 456). The problems are exacerbated as students "internalize the frustrations of confronting barriers to development and learning and the debilitating effects of performing poorly at school" (Adelman & Taylor, 2000, p. 119), with many studies also finding an

impairment in persistence of effort in laboratory tasks with children with ADHD (Barkley, 1997, p. 80). These symptoms and academic risks are likely to arise from multiple interacting factors that cannot be understood in isolation (Graham, 2008, p. 12).

Behaviors associated with ADHD in school are numerous and include difficulty playing or engaging in leisure activities quietly, difficulty taking turns, and difficulty sustaining attention in tasks or play activities. The list goes on, including fidgeting hands and feet, squirming in seat, leaving seat often when staying seated is expected, frequently not following through on instructions, failing to finish schoolwork, avoids tasks that require sustained mental effort, often talks excessively, interrupts often, and appears not to be listening when spoken to (Barkley, 1997; Daley & Birchwood, 2010; Graham, 2008, p. 23; Prosser, 2008, pp. 83-84). These behaviors exist in a wide range in the population and a 1997 large-scale twin study found that ADHD was not actually a discrete disorder, rather was present across the whole population in differing degrees. Therefore, it could best be described as a continuum of behaviors with no physiological significance to any diagnostic cut-off criteria based on a number of symptoms (Levy et al., 1997). Barkley's work reveals that when performing an information-processing task, children with ADHD are less likely to alter their response after making an error and more likely to perseverate when responding. He argues that failure to adjust motor performance after feedback is due to a failure in holding in mind information on the outcomes of immediately preceding trials. This failure in retrospection influences the immediate future responses (Barkley, 1997, p. 76).

Poor behavioral inhibition, Barkley claims, also leads to secondary deficiencies in working memory, where children with ADHD are more significantly influenced by context than by internally represented information. Relatedly, they are also more influenced by immediate

events and their effects than those with more long-term consequences, and are less likely to recall and hold in mind information about the past to use that information to plan for the future. Likewise, Barkley says deficiencies in working memory cause those with ADHD to be less successful at effectively managing tasks that have delays in the time that separate events, responses, and their consequences. Ultimately, persistence in goal-directed behavior in those with ADHD is subject to greater interference by disruptions in the external and internal environments and result in less success at goal attainment (Barkley, 1997, p. 77). When we apply the deficiencies of ADHD found in Barkley's work to the practical classroom setting, those with ADHD display a decreased ability to imitate lengthy sequences of goal-directed behavior demonstrated by others, like teachers, and information recalled from memory is often disorganized and deficient. Significant deficiencies in the performance of social skills are also observed, like in activities involving sharing and cooperation, as well as other adaptive behaviors that rely on the evaluation of future versus immediate consequences. The problem for those with ADHD, Barkley says, is not one of knowing what to do, but in doing what is known, when it would be most adaptive to do so. "This same problem is typical of patients with injuries to the prefrontal cortex" (Barkley, 1997, pp. 77-78), which has been shown to be of comparatively decreased size in neuro-imaging studies of children with ADHD (Daley & Birchwood, 2010, p. 455).

With a diminished capacity for self-regulation of effort and a poorer working memory and internalized self-speech, students with ADHD have difficulty in bridging delays in reinforcement that allow persistence in goal-directed acts (Barkley, 1997, p. 81). Similarly, children with ADHD have been found to be much less able to resist prohibited temptations than were same-age peers without ADHD, are less adequate at problem solving, and less likely to use

organizational rules and strategies in performance of memory tasks (Barkley, 1997, p. 82).

Children with ADHD, compared with those without ADHD, appear to produce less speech in response to confrontational questioning, are less competent in verbal problem-solving tasks, are less capable of communicating task-essential information to peers in cooperative tasks, and produce less information and less organized information in their story narratives (Barkley, 1997, p. 83). Students suffering from ADHD require a great deal of support in the academic setting to adequately compensate for these deficits and promote better learning and prosocial behavior.

While symptomatic behaviors typically begin early in childhood and continue chronically throughout adult life, they are associated with significant academic underachievement, disruptive behavior, and poor peer relationships (Daley & Birchwood, 2010; George J. DuPaul, 2012).

Primary school children exhibiting symptoms of ADHD performed significantly worse on standardized reading and math tests than their peers in one study, and another large-scale study in the general population found a significant negative association between core symptoms and reading, writing, and mathematics (Daley & Birchwood, 2010). Academic achievement of students with ADHD has been found to be approximately 0.71 standard deviation units below their typical peers (George J. DuPaul, 2012, p. 388). Students with ADHD are also more likely to be placed in special education classes, more likely to experience behavioral problems leading to suspension or expulsion, are at higher risk for dropping out, and less likely to start or finish a postsecondary education (Daley & Birchwood, 2010; George J. DuPaul, 2012).

The distinction between the role of symptoms and impairment is important in diagnosis and, specifically for this study, appropriate treatment for inattention, hyperactivity, or impulsivity before or after diagnosis. Since criterion for impairment only appeared in the 2000 publication of the fourth edition of the Diagnostic and Statistical Manual, Zoromski, Owens,

Evans, & Brady (2015) found symptoms have traditionally garnered more attention than actual impairment in the diagnosis process. Their work examined the relationships between ADHD symptoms and impairment within a sample of 788 children in early childhood, middle childhood, and adolescence. “Indeed, research conducted in normative community samples indicates that many people meet the ADHD symptom criteria but are not impaired” (Zoromski et al., 2015, p. 1243). Results of this study indicate that, at all ages, inattention was more predictive of academic impairment than hyperactivity/impulsivity. Hyperactivity/impulsivity, however, was more predictive of impairment in social functioning with peers and teachers for only early childhood students. This highlights a limitation in the process of effective detection of academic impairment and intervention discussed later in this study. Specifically, hyperactivity and impulsivity behaviors are more overtly disruptive to the educational environment, but less predictive of academic impairment. Conversely, inattention is likely more predictive of academic impairment, but in isolation, much more obscure in nature and, therefore, more difficult to detect. This was evidenced in a meta-analytic study which found those with impulsivity and hyperactivity are referred more often for treatment than those exhibiting inattention, “likely as a function of the disruption that they create in the classroom” (Zoromski et al., 2015, p. 1251). Since the continuum of ADHD-linked behaviors have no physiological significance to any diagnostic cut-off criteria based on a number of symptoms, students on the end of the continuum whom are excessively active, talkative, impulsive, or disorganized are targets to be suppressed since they tend to disrupt the orderly expectation of the classroom (Neufeld & Foy, 2006, p. 459). This sets up potential for intervention goal displacement, from mitigating academic impairment to minimizing troublesome behaviors, which diverts attention away from academic goals and intervention in favor of minimizing symptoms. Only in recent

years, “improved functioning, rather than symptom reduction, has become a recommended target for intervention” (Zoromski et al., 2015, p. 1243).

Medicalization of ADHD

Medication is the most common intervention for children with ADHD. Prescriptions for stimulant medication nearly tripled from 1990 to 1995 alone, leading to many controversies (Purdie et al., 2002, p. 61) and a modern phenomenon that has sparked virulent debate (Graham, 2008, p. 7). Methylphenidate, known under its brand name as Ritalin, became the most well-known prescription used to treat ADHD. From the perspective of schools, Ritalin was readily available and inexpensive, required no special knowledge to administer, and caused no extra work for teachers while also ostensibly reducing unacceptable behaviors in the students (Neufeld & Foy, 2006, p. 464). Prescriptions for Ritalin rose dramatically in the U.S. during the early 1990s, leveling off at approximately 11 million per year by 2007 (Graham, 2008, p. 13) and rising to approximately 14 million (6.1% of all children aged 4-17) by 2011 (CDC, 2017). Likewise, other stimulant amphetamine prescriptions, like Adderall, increased dramatically in the late 1990s, from 1.3 million in 1996 to nearly 6 million in 1999 (Graham, 2008, p. 13). A global market study for ADHD medications by Scheffler, Hinshaw, Modrek, Modrek, and Levine (2007) found there was a 274% increase in global utilization of all ADHD medications from 1993-2000, with the U.S. claiming more than 83% of that market. The increase in use equated to a ninefold increase in global spending on ADHD medications during that same time-period, with the most drastic annual increases occurring in last three years of the study. The U.S. market drove this burst in global spending, which totaled \$2.4 billion by 2003, with newer, longer-acting medications. Scheffler also found that the United States accounted for approximately 92–95% of the total spending on ADHD medications. U.S. sales volume

increased 80% during the time of the study, but the bulk of spending increases were attributed to a 285% increase in prices (2007, pp. 453-454). This has resulted in an establishment of strong market pressures that further promote the medical model, as well as an intense increase in the acceptable use of stimulants by American students, with more Ritalin being consumed in the United States alone than all the rest of the world combined (Neufeld & Foy, 2006, p. 450).

Researchers still do not know exactly what stimulants like Ritalin do in the brain, nor do they understand what long-term effect they may have upon the developing brain. These drugs are thought to increase the level of dopamine and norepinephrine present in the neurotransmitters of the brain or thought to increase blood flow to areas of the brain responsible for executive control (Graham, 2008, p. 13). Medication is found to be effective in suppressing undesirable behaviors in only about two-thirds of children diagnosed with ADHD and dosages must be carefully regulated so that a balance is struck between adequate behavior modification and undesirable side effects (Graham, 2008, p. 15). Ritalin acts on the cerebral cortex, the outermost layer of the brain responsible for movement and higher-order thought processes including speech and decision-making. Ritalin serves to repress hyperactivity and increase focus, but also causes dizziness, drowsiness, blurred vision, depression, anorexia, nausea, growth repression (Slee, 1994, pp. 159-160) appetite suppression, insomnia, teeth grinding, tics, tachycardia, and emotional instability (Graham, 2008, p. 14).

School-Based Interventions

While there is no consensus on which intervention for students with ADHD is the most effective (Purdie et al., 2002, p. 66), school-based interventions generally fall under the categories of academic, contingency management, and cognitive behavioral. Academic interventions focus primarily on influencing antecedent conditions related to instruction and

academic materials, like peer tutoring, computer-aided instruction, and organizational skills interventions (Raggi & Chronis, 2006). Contingency management interventions utilize reinforcement and punishment to influence school-related behaviors. Lastly, cognitive behavioral interventions focus on developing skills related to self-control and reflective problem-solving strategies (George J. DuPaul, 2012, p. 391). A meta-analysis by DuPaul shows that “school-based interventions for students with ADHD yield moderate to large effects for both behavioral and academic outcomes, with results varying across research design, intervention type, publication status, and in some cases school setting and educational placement” (p. 401). Specifically, academic interventions or combined academic and contingency management interventions were associated with greater effects on academic outcomes than other intervention types regardless of research design” (George J. DuPaul, 2012, p. 402). “Given the moderate to large effects on both academic and behavioral functioning, school-based interventions should be a first-line treatment for students with ADHD” (George J. DuPaul, 2012, p. 406). Similarly, DuPaul’s most recent (2012) and previous (George J DuPaul & Eckert, 1997) meta-analyses both indicate that contingency management interventions are effective for enhancing classroom behavior and engagement with instructional activities. DuPaul also finds that combining intervention strategies like academic with contingency strategies, “appear effective and may offer the opportunity to address academic, self-control, and behavioral deficits in a more comprehensive fashion than a single intervention strategy in isolation” (George J. DuPaul, 2012). While teachers are likely to be acutely aware and focused on disruptive behaviors, academic interventions should take aim on executive functioning deficits, like working memory and planning and response inhibition, rather than targeting the behaviors specifically (Daley & Birchwood, 2010, p. 459). Results of DuPaul’s most recent meta-analyses “indicate that

academic difficulties exhibited by students with ADHD can be effectively addressed on a short-term basis by school-based interventions, especially those strategies that directly address academic skills” (George J. DuPaul, 2012, p. 407).

Several academic interventions have received research attention and demonstrate academic benefit to children and adolescents with ADHD, including peer tutoring, task/instruction modifications, classroom functional assessment procedures (helps collaboratively determine when, where, and why inappropriate student behaviors occur), self-monitoring, strategy training (involves teaching children a specific skill to be applied in academic situations). Additionally, to help compensate for poor executive functioning in ADHD, teachers are advised to communicate using short clear messages to enable more efficient information processing and improved subsequent understanding by the student and that tasks should be reduced in length and divided into subunits (Daley & Birchwood, 2010, p. 461).

Contributions of Study

The purpose of this study is to critically examine the contexts and intervals of intervention amid ADHD-linked student issues. By examining the pre-diagnosis intervention timelines and the associated teacher approaches, we can highlight the ADHD phenomenon at the typical point of origin, before medical or special education referral. We seek to know when teachers discovered a genuine need to intervene, when they initiated an intervention and, subsequently, how intervention sets were improved over the school year in pursuit of optimal treatment. While the medical model of ADHD suggests a neurobiological cause best treated with stimulants, Barkley’s behavioral framework (1997) and the expected influences of executive functioning have obvious relevance in the academic treatment of students with ADHD and the ongoing reinforcements from teachers. Because students with ADHD are more

significantly influenced by context than by internally represented information, and more influenced by immediate events and their effects than those with more long-term consequences, studying these dynamics in the classroom environment is important for the practical treatment of those with ADHD.

The Problems with the Medical Model of Intervention

Whereas the focus of this study is on the incubation stage of diagnosis in the classroom setting, it is important first to expose the negative aspects of medical intervention and the overextension of the medical model. While this study includes examination of critical, classroom-related events leading up to a possible referral and possible diagnosis, it is important to expose the faults in utilization of the medical model in order to highlight the importance of successful classroom-level interventions and control of antecedent contexts by teachers before referral for special education or medical intervention occurs. This study situates itself firmly between classroom-level problems and teacher-initiated solutions in a single school year. The literatures reviewed thus far address the problems with ADHD in relation to learning and schools, as well as an overview of the most common and most effective known solutions. In order to situate the purpose of this type of study relative to existing knowledge, a critique of the medical model will more tightly frame the need to look inward to the educational setting for improved understanding and healthier solutions. The ADHD literature has been dominated more by medical than educational studies, but if educational outcomes are to be enhanced for ADHD students, then educational answers must also be sought (Prosser, 2008; Purdie et al., 2002, p. 88). The lack of educational approach may even aggravate the impairment that the medicalized solution attempts to remedy. Furthermore, Raggi and Chronis (2006) found repeatedly in their review of ADHD academic interventions that researchers were commonly utilized to implement

treatments in laboratory-based classroom settings, rather than utilizing teachers to implement them in authentic school settings. “[I]f we ask only medical questions about ADHD, we will get only medical answers and more drug treatment. However, if we also ask educational, social and political questions, we will not only gain a better understanding of ADHD, but also possibly identify why drug use for the disorder has skyrocketed in recent years” (Prosser, 2008, p. 82).

Growing Market of Unsatisfactory Treatment

The medical model has supported a growing market that has incentivized diagnosis. Scheffler’s study (2007) found that the U.S. accounted for approximately 92–95% of \$2.4 billion in global spending on ADHD medications in 2003 alone, while demand increased prices by 285% between 1993-2000 (2007, pp. 453-454). The implication for this study is that the huge market for the medical treatment of ADHD will continue to serve its own persistence, at the likely expense of other, more effective treatments. While medication is a necessary component of a balanced treatment program for many students, there exists a growing concern over the likelihood of overdiagnosis of ADHD and a subsequent overuse of medication as the primary method of treatment (Purdie et al., 2002, p. 62; Scheffler et al., 2007, pp. 454-455). A meta-analysis by Purdie, Hattie, and Carroll (2002, p. 66) reviewed 74 studies, covering the full range of ADHD interventions, and concluded that stimulants have no clear effect on academic performance or learning, finding further that they have only small effects on general cognitive abilities. Likewise, they found that school-based interventions outperform medication on both these outcomes (Purdie et al., 2002, p. 88).

A meta-analysis by Purdie, et al. (2002) found in one study that 39% of individuals using ADHD medication had significant problems with side effects, like fatigue and confusion. Another study found 50% of users experienced nausea and 17% experienced lowered energy,

gas, diarrhea, insomnia, tremor, muscular tension or teeth grinding. Since students need to be under the influence of stimulant treatment during the school day, the medication dosage must usually be timed to wear off by late afternoon to allow for more normal appetites and sleep cycles. This causes a rebound effect, which can cause undesirable behaviors that are worse than original behaviors the medication was meant to treat. Doctors sometimes recommend drug-free periods during weekends and school holidays to help moderate the side effects (Graham, 2008, p. 20). These findings highlight the importance of feasibly exhausting non-medical interventions to avoid unnecessary effects of medication, which often go beyond physical symptoms.

Medical trends in ADHD treatment have also transformed the perceptions and status of students on medication (Slee, 1994, p. 158). This is especially true of students' self-perception. "The narratives of these children consistently show their sense of loneliness and isolation, usually immersed in shame and cloaked in self-directed blame. Very few children display awareness of the situational context in which their symptoms emerge. They tend to adopt the harmful cultural tale that there is a great deal wrong with them. Typically, this precludes any recognition of their own strengths" (Graham, 2008, p. 17). This only contributes to a pathological cycle in society that "is undermining free will and moral responsibility in schools and has significant implications for fostering school cultures that are supportive of inclusive rather than integrative practices" (Prosser, 2008, p. 93). Prosser states that when schools value student assimilation of the dominant cultural codes over student creativity, diversity and difference, students with difficult behaviors will experience troubled interactions. These are explained as student deficits, rather than the school's failure to acknowledge and respond to diversity. The pathologizing "cycle is completed as students come to see themselves in terms of

the medical discourse” (Slee, 1994, p. 159). This realization further demonstrates a need to carefully examine all factors of intervention that would prevent or reduce the use of medication.

The Role of Teachers and Context of Intervention

ADHD has always been first and foremost about behaviors in children that adults find troubling (Neufeld & Foy, 2006, p. 454) and research suggests that diagnosis corresponds with starting school and is pursued mainly out of frustration with inadequate school support (Prosser, 2008, p. 82). Likewise, there is a known correlation between a peak in the diagnosis of mental and behavior disorders and the start of compulsory school attendance, and ADHD is the most common of these (Graham, 2008, p. 22). A meta-analysis of clinical studies found “the major impact of medication was on improved behavior, more benefiting teachers and parents than the child” and other neurochemical studies consistently show that medications reverse behaviors related to hyperactivity, but learning deficits persist (George J. DuPaul, 2012, p. 388; Graham, 2008, p. 15). Snider, Busch, and Arrowood (2003, p. 50) found in a study of 200 general educators and 200 special educators that 83% agreed or strongly agreed that their classroom is more manageable when students with ADHD are medicated. This research looks more closely at classroom-level factors to better understand what the interactions between student and teacher are like.

The context of the school experience for children typically involves spending six to eight hours a day, five days a week, in classrooms and school settings that require them to follow rules, interact appropriately with each other and adults, participate in teacher-directed instructional activities, learn what is being taught, and refrain from disrupting the process for themselves or others. From a teacher’s perspective, this is a challenging task that is even more demanding when it involves children with ADHD (George J DuPaul & Stoner, 2014, p. 139).

Given that behaviors associated with ADHD most often conflict with demands in the school setting, many studies find that teachers are the biggest initial referral source, typically by recommending to parents that their child receive assessment for ADHD (Anderson, Watt, Noble, & Shanley, 2012, p. 511; Graham, 2008, p. 22; Sciutto, Terjesen, & Frank, 2000, p. 115; Vereb & DiPerna, 2004, p. 421). While it is incumbent upon teachers to identify problems in student behavior or performance and subsequently decide how and when to act, teachers have individual thresholds of tolerance and competencies that likely cause wide variation in treatment and results. For instance, Purdie, Hattie, and Carroll's (2002, p. 65) meta-analysis on interventions for ADHD reveal the distinction between acceptable and unacceptable classroom behavior and performance is extremely blurred. Snider, et al. (2003, p. 52) also concluded in their study of teacher knowledge of ADHD that if a child's behavior improves as a result of ADHD stimulant drug therapy, it might validate an incorrect assumption that the diagnosis was legitimate and bolster their confidence and contribute to an escalating cycle of referrals. It is important to understand the inner-workings of the classroom when problems arise and are identified, as well as the context and subsequent reactions of teachers.

In the broader historical context of students with disabilities and special education, Skrtic (1991) lends to this argument in his critique of special education. Skrtic states there are four mutually reinforcing assumptions that shape the discourses and practices of public education in relation to student disabilities, which also seem especially relevant for students with ADHD-linked academic issues.

In the language of the special education discourse, these assumptions are that: a) disabilities are pathological conditions that students have, b) differential diagnosis is objective and useful, c) special education is a rationally conceived and coordinated

system of services that benefits diagnosed students, and d) progress results from rational technological improvements in diagnostic and instructional practices (1991, p. 152).

He argues further that the discourses in the fields of school administration, special education, and regular education produce and interpret empirical data on student outcomes and school effects intuitively, according to the four taken-for-granted assumptions about disability, diagnosis, special education, and progress. This reproduces the status quo, which reaffirms the four assumptions. “Thus, the institutional practice of special education (and the very notion of student disability) is an artifact of the functionalist quest for rationality, order, and certainty in the field of education, a quest that is both intensified and legitimized by the institutional practice of educational administration” (Skrtic, 1991, p. 153).

Skrtic’s work is readily applied to this study and the institutional practices surrounding ADHD-linked academic issues. Students exhibiting ADHD-type behaviors tend to disrupt the balanced order of a typical learning environment or activity. Teaching these students in the regular education environment also entails more uncertainty than teaching typical peers. Skrtic says the practice of special education distorts the problem of school failure and prevents the field of education from entering into a productive confrontation with uncertainty. This study contends that Skrtic’s argument can be extended to include the medicalization of the ADHD epidemic, which distorts the problem of school failure, clouding objective examination of contributing instructional practices and learning environments. Since uncertainty is a necessary precondition for growth of knowledge and progress, Skrtic asserts the objectification and legitimization of school failure as student disability prevents public education from moving beyond its functionalist practices. When applied to students with ADHD, medical intervention

further augments the distortion of school failure, which, as Skrtic says “prevents public education from seeing that it is not living up to its democratic ideals” (Skrtic, 1991).

Skrtic said the practice of special education “emerged to protect the legitimacy of a nonadaptable bureaucratic structure faced with the changing value demands of a dynamic democratic environment” (1991, pp. 169-170). Of particular interest is Skrtic’s assertion that misidentification of students is often due to problems in defining and/or measuring the particular learning disability, as well as issues related to tolerance and competence of teachers. He says many students identified as mildly handicapped, especially those labeled as learning disabled, are not truly disabled in the pathological sense, but the designation is related to problems with the will or capacity of teachers and schools to accommodate student diversity, accompanied by issues in objectively defining or measuring the learning disability (Skrtic, 1991). He analogizes student disabilities as an organizational pathology resulting from the inherent structural and cultural characteristics of traditional school organizations and that students whose needs fall outside the standard programs must be forced into them or out of the classroom. This is compounded, he says, by the rational-technical approach to school management, which reduces professional thought and discretion and the degree to which teachers can personalize their standard programs. This study seeks, in part, to exhibit and examine evidence of a range of tolerance and competence on the part of teachers, especially in relation to personalized intervention for students exhibiting pre-diagnosis ADHD-linked issues. In practical terms, this study seeks to understand what teachers do to personalize the standard programs in response to ADHD-linked problems while also extracting any evidence of teacher thresholds of tolerance, subsequent variation in treatments, and the contributing contextual factors.

Since ADHD has no lab or radiological confirmatory tests and no distinguishable physical features, teacher subjective responses to problems are key for appropriate treatment. While diagnosing ADHD is most efficiently accomplished with parent and teacher ratings scales (Pelham, Fabiano, & Massetti, 2005, p. 469), it is complicated and often subjective in nature with no single acceptable measure of diagnosis (Purdie et al., 2002, p. 65). ADHD diagnostic questionnaires can practically be viewed as measures of deviance “emanating from within the aberrant child from a questionable family” (Graham, 2008, p. 27), but have high rates of false positive diagnoses, leading many to be treated with stimulants for nonexistent internal dysfunctions. More important to the role of schools and teachers, high rates of false positives also interfere with efforts to clarify which interventions do and do not show promise for mitigating different types of learning and behavior problems (Adelman & Taylor, 2000, p. 121). Furthermore, the predominant medicalized solution renders schools themselves tacitly blameless in their responsibility to examine the contributing program structures and classroom-level contexts. The result likely has been a displacement of the fundamental goal of decreasing student-learning deficits with a more expedient goal of decreasing undesirable student behaviors.

DuPaul (2014, p. 142) recognizes this issue and argues in response that the focus of treatment for students with ADHD should primarily be focused on increasing the frequency and duration of appropriate behaviors like academic productivity and accuracy rather than primarily on decreasing disruptive classroom behavior. However, research has shown thoroughly that teachers reduce their expectations on academic performance of students with ADHD and defer to the interventions of professionals (Slee, 1994, p. 159). “This medical model is all pervasive even though it robs individuals of the ability to appraise environmental factors and avoids the need for a person-within-environment approach” (Adams, 2008, p. 119). School-based interventions,

therefore, must be not only be utilized for effective counterbalance to an overreaching medical model, they must also be critically examined to ensure they are properly aimed at decreasing learning deficits, rather than simply decreasing challenging behaviors. Schools need to be more discerning in their contributions to this goal displacement, especially in the process of initial intervention and personalization of treatment. This places teacher attitudes, beliefs, tolerance, and pedagogical styles as crucial deciding factors in ADHD treatment and diagnosis (Graham, 2008, p. 12) and puts teachers in an advantageous position to challenge the causal simplicity of the medical model (Adams, 2008, p. 121).

Teachers are also the prime organizers of the contextual learning environment and facilitators of personalized instruction. The psychological literature has compelling arguments that misbehaviors associated with ADHD can be influenced by extrinsic factors in the environment (Graham, 2008, p. 16) and educational research shows that the majority of learning, behavior, and emotional problems seen in schools stem from not appropriately personalizing instruction to account for external barriers and learner diversity (Adelman & Taylor, 2000, p. 119). Schools' failure to differentiate external from internal barriers to development and learning has resulted in a great deal of confusion and controversy (Adelman & Taylor, 2000, p. 121) which needs to be directly addressed by schools and teachers. DuPaul argues that ADHD only becomes a handicap in a non-accommodating environment (2014, p. 248). Research has found that the context of intervention is important in the practical treatment of those with ADHD. Since "ADHD generally results in a deficit in behavioral performance, the context in which interventions for children with ADHD are developed is as important as or more important than the intervention itself" (Miranda et al., 2002, p. 547) and that children with ADHD are more influenced by context than by internally represented information, which guides executive

functioning (Barkley, 1997). This suggests that teachers must effectively understand and manage contextual factors while implementing practical interventions to help overcome underlying student executive functioning deficits. Adelman and Taylor (2000, p. 121) also argue that since the majority of problems related to ADHD stem initially from external factors, that schools should focus first on improving environments and systems that affect learning, behavior, and emotional problems.

Teachers must also deliver these chosen interventions in a timely and proximate manner, which this study seeks to focus in on especially. Combined with the fact that school-based interventions can improve academic functioning in the short-term, there is a need for academic interventions to be utilized as early as possible for most students with ADHD (George J. DuPaul, 2012, p. 409). Teachers have a great influence on when interventions are utilized, but some studies have shown that medication treatments may postpone the use of other interventions that may be more effective in the long term (Purdie et al., 2002, p. 66).

DuPaul and Stoner's work on ADHD in schools (2014) found the following:

Although biological variables are hypothesized to be the primary causes of ADHD, the role of environmental factors in setting the occasion for or reducing the probability of ADHD-related behaviors remains important for professional service delivery. Both antecedent and consequent stimuli are critical in determining the severity of attention problems, impulsivity, and behavior control. In fact, the development of classroom intervention for children with ADHD is enhanced by (1) determining the behavioral function of ADHD-related behaviors and (2) implementing strategies that are linked directly to behavior function. (p. 16)

A major tenet of DuPaul's work is that effective interventions must also be implemented in close proximity to the target behavior (2014, p. 143) in order to have an effect on impulsivity, which is the major deficit causing attention difficulties (Barkley, 1997).

DuPaul's work also emphasizes a conceptual principal that is understated or not found in other literatures on ADHD intervention; namely, that ADHD intervention must be individualized through an ongoing consultative, collaborative, problem-solving process that monitors using assessment data (George J DuPaul & Stoner, 2014, p. 143). The implication is that the standard interventions studied in the literatures are just an entry point for successful, differentiated academic intervention. Teachers' ongoing adaptation of best-practice strategies and their wherewithal to proactively control and adjust environmental factors are fundamental to student success. "The prevailing assumption is that although environmental factors affect the behavior of all children, the performance of children with attention and behavior control problems is much more sensitive to these events" (George J DuPaul & Stoner, 2014, p. 16).

Knowledge, Attitudes, and Actions of Teachers

This study seeks to better understand the environmental factors key for academic success of students with ADHD, which research shows includes teachers' attitudes, patience, knowledge of intervention techniques, and use of gestures when communicating (Daley & Birchwood, 2010, p. 461). Anderson maintains that teachers' knowledge and attitudes about ADHD are likely to influence their roles and the subsequent behavioral and learning outcomes for children, like appropriate and timely assistance, selection of effective teaching approaches and behavioral management strategies, and their willingness to implement interventions (Anderson et al., 2012, pp. 511-512). While there is an emphasis on teachers' self-reported timing of actions and behaviors, this study seeks also to understand teacher backgrounds and experience in relation to

ADHD. DuPaul states one of the most frequent complaints from parents of children with ADHD is that their children's teachers do not have any background in working with students with ADHD (2014, p. 277). He argues further that many teachers are not adequately prepared to work effectively with children with ADHD, even after attending professional development workshops and reading relevant professional literature (2014, p. 272).

Furthermore, this study especially highlights the process of intervention implementation and subsequent upkeep or revisions. DuPaul's findings indicate that even though behavioral interventions have been found effective for ADHD, they are often not utilized in the classroom since teachers frequently find such procedures impractical (2014, p. 279). This study seeks to explore these procedures and related teachers' perspectives. Teacher procedures and perspectives are especially important to examine in the pre-diagnosis stage, as other research has found that teachers provide inaccurate and inappropriate advice to parents, whom frequently follow this advice (Kos, Richdale, & Jackson, 2004, p. 518). Sciutto (2000, pp. 115-116) found that a large number of children referred for ADHD more likely suffering some other disorder or none at all, highlighting again the importance of teacher interactions, knowledge, and attitudes in relation to both treatment and any subsequent medical recommendation.

Anderson's Australian study (2012) on knowledge and attitudes toward teaching children with ADHD across teacher career stages found that as teachers gain experience, their knowledge increases alongside more favorable behaviors toward teaching students with ADHD. However, Anderson also found, somewhat ironically, that experienced teachers also developed a less favorable affect toward teaching these students. Since one of the most effective intervention approaches for ADHD is the manipulation of antecedent and consequent events in the classroom environment (George J DuPaul & Stoner, 2014, p. 21), we can predict that more experienced

teachers are more effective at managing these contexts, but at the expense of some positivity in attitude. ADHD knowledge has been shown to be specifically associated with the number of students with ADHD taught over a teacher's career, rather than number of years (Sciutto et al., 2000), with a study by Kos and others (2004, p. 521) confirming teaching experience alone was not significantly correlated with actual knowledge of ADHD. In spite of a lack of correlation between experience and knowledge of ADHD, Kos found that teachers with more years of teaching experience generally perceived themselves as having significantly more knowledge than less experienced teachers (Kos et al., 2004, p. 521). Sciutto (2000, p. 121) found that teachers are most knowledgeable about the "hallmark" characteristics of ADHD, rather than more nuanced distinguishing characteristics that are most useful in diagnosis. However, as mentioned previously, these "hallmark" characteristics are not necessarily helpful in accurately identifying ADHD (Pelham et al., 1992). Since research shows that teachers hold tightly to their beliefs regardless their accuracy, Kos argues that experienced teachers tend to be overly optimistic about their knowledge about ADHD, making them unlikely to ask other professionals for more information about the disorder (2004, pp. 518-519, 525). Anderson argues that it "is possible that as teachers gained more classroom experience and knowledge of ADHD, they also gained more awareness of the problems faced by children with ADHD. They may have developed greater negative affect as a result of this raised awareness" (2012, p. 523). This conflict between favorable behaviors and unfavorable attitudes suggests that teachers become ambivalent about teaching children with ADHD, which, in extending Anderson's argument, a greater negative affect would also likely support a premature acceptance or fostering of medical intervention. Vereb and DiPerna (2004, p. 422) found that teachers' willingness to implement an intervention has been found to significantly affect the effectiveness of that intervention. Their study found a

positive relationship between teacher knowledge of ADHD and their acceptability of medication treatments (Vereb & DiPerna, 2004, p. 425). Consequently, this study also seeks to understand the attitudes of teachers and their self-perceived willingness to effectively intervene for students exhibiting ADHD related behaviors and performance problems.

Teacher ambivalence toward students with ADHD combined with a tendency to hold tightly to inaccurate beliefs would likely decrease the likelihood of successful and ongoing tailoring of standard ADHD intervention strategies. Specifically, the relatively better attitudes of inexperienced teachers increases the likelihood of expending extra effort to tailor ADHD intervention strategies and proactively control environmental contexts to fit specific student needs. However, inexperience and lack of knowledge inhibit effective understanding of standard intervention strategies and proactive management of environmental factors, rendering tailored intervention unattainable. By extension, experienced teachers, with more years interacting with students with ADHD, and with more professional development and exposure to best practices, are better equipped to utilize standard intervention strategies and actively control environmental factors for the betterment of students with ADHD. However, increasingly negative attitudes decreases the likelihood of expenditure of additional effort in tailoring interventions and environmental factors to specific student needs. While Anderson's research and others do not fully corroborate this prediction, teachers likely have a fluid threshold of potential effectiveness over their career, which could be partially described as a combination of knowledge/experience and attitude/effort. In short, experienced teachers have, or believe they have, more expertise required to customize instructional activities and contexts, but increasingly negative attitudes inhibit the extensive effort required for ultimate success. Conversely, inexperienced teachers' relatively better affect would better sustain the extensive efforts required to tailor instructional

activities and contexts, but lack the foundational expertise to do so optimally. This study therefore explores teacher experience, self-reported knowledge, and self-reported attitudes as important contextual factors to be considered and explored for each critical incident. Likewise, the timing and individualizing of each intervention is reported for each.

Summary

Most research on ADHD has been conducted from a medical viewpoint, focused on medical treatments of troubling behaviors. The social construct of ADHD has placed educational solutions to ADHD-related difficulties secondary to medication. This study focuses exclusively on the context of educational solutions by examining teacher response to student behaviors associated with ADHD in pre-diagnosis stage, in terms of action taken and amount of time taken to act during the school year. The characteristic behaviors of inattention, hyperactivity, and impulsivity are quite troublesome in school settings, for both students and teachers. This has led to probable overdiagnosis of the disorder and the misapplication of medication. Schools and teachers must utilize studies like this to scrutinize contextual factors under their control and account for them in the rethinking and retooling of practices and program structures. This study sheds light on the intervention origination process by teachers and the time taken to intervene and individualize interventions. The dynamic context of these responsive actions to ADHD-linked student issues in the pre-diagnosis stage is also examined, most particularly regarding teacher attitudes and collaborative approach. Since school-based interventions can ameliorate academic functioning in these students, examination of their application informs the practical treatment of students with ADHD-linked behaviors in the incubation stage of diagnosis before reliance on medical interventions. By looking beyond medical interventions and examining the contextual and environmental factors surrounding the

treatment of students suffering symptoms of ADHD, this study helps reveal the practical interaction between problem and solution within the strict context of the school environment.

Chapter 3: Methods

Introduction

This study was conducted in a large, high performing Pre-K through twelve public school district. Key informant interviews were conducted with elementary and middle school teachers whom had recently originated solutions for students exhibiting ADHD-associated behaviors or academic issues. Subjects were invited into this study based on their categorical fit with the characteristics of an ideal key informant to this study. Marshall's work on the key informant technique (1996, p. 92) directed this methodology and his ideal key informant characteristics were integrated into this study as follows:

Role in community. Teachers' formal role expose them to the kind of information being sought by the researcher during the critical incubation stage of diagnosis.

Knowledge. Teachers have access to the information desired surrounding educational treatment prior to any medical intervention and have likely have absorbed the information meaningfully.

Willingness. Participant teachers should be willing to communicate their knowledge to the interviewer and to cooperate as fully as possible.

Communicability. Participant teachers should be able to communicate their knowledge in a manner that is intelligible to the interviewer.

Impartiality. Participant teachers should be objective and unbiased, with any relevant biases made known to the interviewer.

While all these characteristics are ideal, "only the informant's role in the community can be determined with certainty in advance" (Marshall, 1996, p. 92), so care was taken to be alert to

significant deficits in the other categories as evidenced during data collection and subsequent analysis.

Interviews focused on the timing of key events in intervention development as well as contextual information surrounding these events. Themes were later developed from interview data which was subsequently analyzed and interconnected layers revealed.

The overarching methodology of this study adheres to grounded theory, which has an aim “to explore basic social processes and to understand the multiplicity of interactions that produces variation in that process” (Heath & Cowley, 2004, p. 142). It was expected that variation among participants would be found in their detection of and responses to student issues; their consultative, collaborative approach; as well as their disposition toward associated challenges in facilitation of interventions for these students. These variations would provide relevant comparative data to inform the narrative and theory generation.

Empirical context

This study was conducted in a large Kansas suburban district in the Greater Kansas City Metropolitan area. The Pre-K through twelve public school district is composed of over 22,000 students, with over 1,400 full-time classroom teachers. Participants were solicited from the district’s 21 elementary schools and nine middle schools. As of the census of 2000, the racial makeup of the district is 92% White, 3.5% Asian, 2.4% Hispanic or Latino, and 2.0% Black or African American. The district website states their students outperformed nearly every educational system in the world tested in math and science on the PISA Exam and a 2015-2016 internal Customer Assessment survey revealed 91% of patrons gave district teachers a grade of "A" or "B". Enduring high performance of students has made this district a model for instructional and programing design for many other districts across the country.

The district collaborates with other entities and facilitates identification of special student educational needs from birth to age five. From ages 36 months to five years, for instance, their own Early Childhood Special Education department has student testing and screening upon request and provides a district-contact for parents to answer any related questions. This department also encourages other community-based staff to refer children and their families to the district if a concern arises related to the presence of potential disability or developmental delay, while also meeting with other agencies, like community-based day care and pre-school providers, and informing them of the child find process.

When a disability is suspected in school-aged children, school personnel refer students for special education evaluation. Parents are notified and involved in the process when a concern first arises. Parents may also request a special education evaluation and the district is required to respond in writing. An evaluation process is then completed by district personnel, most often involving school psychologists, resulting in determination of need for special education and related services. Execution of the process always includes consultation and collaboration with parents at each school building site in the district. Parents are encouraged to contact the neighborhood school principal, counselor, school psychologist, or the child's classroom teacher with questions about special education services and the evaluation process, with each school in the district also having a parent representative serving on the district's special education advisory committee.

The district states that a variety of tools and strategies are used to gather information to determine student eligibility for special education, with the evaluation process specifically establishing whether a child has a disability and a justifiable need for specially designed instruction to benefit from the general education curriculum. While specifics of the referral

process will be detailed later to contextualize the findings of this study, the following highlights the general procedures followed by this district. Once a student is referred for special education evaluation, as would be the case for a child suspected of requiring special services due to ADHD, input from teachers is garnered, including screening surveys that use the same diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders – Fifth edition. The district does not undertake actual ADHD-diagnosis or assert legitimate, medical judgments or diagnostic conclusions. They utilize diagnostic criteria only to help determine academic needs, but in more severe cases, members of individual building problem-solving teams occasionally broach the subject by asking parents if visiting a pediatrician has been considered. If a disability is found through testing evidence and a need for special services confirmed with supporting data, students in elementary, middle, and high school receive needed educational supports based on an Individual Education Plan (IEP) that is formulated collaboratively by a special education teacher. The IEP is utilized to organize specially designed instruction and related services necessary for a student to make progress in the general education curriculum. Each student's IEP team determines which services are necessary for equitable access to the general education curriculum. Should the student's testing reveal a documentable disability, but with no need for specially designed instruction, a Section 504 Plan is often written in order to ensure use of reasonable modifications that allow equal access to school-wide curricular and co-curricular activities.

Service delivery models for those who do require specially design instruction include collaborative in-class support, with special education staff directly providing periodic assistance to the student while also working with general education staff to design accommodations or to modify the curriculum and/or materials. Service also includes learning centers or resource rooms

where students receive instruction from a special education teacher in an individual or small group setting, but spend most of the day in the general education classroom.

Since the school district's policies systematically preclude staff from direct medical referrals, parents have prerogative on pediatrician involvement and subsequent possibility of diagnosis and medical interventions. Since this study is concerned with the purview of schools in treating ADHD-linked student issues, examination does not extend beyond their range of operation. Consequently, referral for special education or 504 evaluation serves as a terminating event, as is the alternative of successful intervention, in the timeline of intervention development that this study is centered on. This study is fixed in the time period from the teacher's first encounter with the student through the school year, and follows events leading to either successful intervention or student referral for evaluation for special education, Section 504-Plan, or medical intervention. The study examines the pertinent contexts of critical incidents related to ADHD-linked student behaviors and issues before referral for special education or medical interventions.

Plan

Potential key informant participants were contacted directly using a within-district email sent batched by individual building address lists of the 21 elementary schools and nine middle schools in order to solicit interest and gain initial consent to participate. Since the average age of initial ADHD-diagnosis is seven years of age for those with moderate symptoms and eight years of age for those with mild symptoms (CDC, 2017), this study targeted elementary teachers of this age-group as key informants. Furthermore, teachers in middle school grades were also targeted as key informants in a concerted attempt to capture information from an appropriate range of learning environments from which ADHD-diagnoses most frequently emerge.

Consequently, high school teachers were not sought for input as their students tend to be well past the age of discovery of ADHD-linked academic issues.

Since identifying student information was not made accessible for this research, the email requested participation from those who have recently experienced challenges in *originating* effective solutions for students experiencing genuine inattention, hyperactivity, or impulsivity issues. The email specified the circumstances most closely associated with pre-diagnosis intervention events, “like when you (or you and your problem-solving team) have had to start from scratch, without the benefit of a previous-year’s plan (e.g. behavior plan from last year) to help.” In this way, respondents were strategically recruited as reasonably more likely to be key informants with essential experience serving a student in the incubation stage of diagnosis preceding any medical interventions. This research design does not readily limit participants from self-selecting based on a desire or aversion to discussing actions and attitudes about ADHD-related challenges and participants’ self-reported actions and attitudes are similarly subject to personal bias. However, the process did garner key informants with ideal characteristics, including regular and special educators, a range of grade-level’s from kindergarten through 8th grade, and a range of teacher experience levels from first year to nearly 40 years of experience. Likewise, the findings revealed variations in treatment and approaches, permitting discrimination among participants and qualifies discussion of their differences.

Once individuals agreed to participate in the study interviews were scheduled via an email link to an online sign-up page. Participants selected an interview day and time, were subsequently met at their classroom for the interview, and completed a consent form prior to the start of the interview. All interviews took place at the end of the school year in April and May and interviews lasted approximately 40 minutes each.

Data was collected using Merton's focused interview technique (1946) encircling critical incidents with teachers in the district whom have recently provided interventions for students exhibiting ADHD-linked behaviors, pre-diagnosis. This interview technique was used to help identify specific actions, decisions, and contextual information surrounding the critical incidents of teacher initiated interventions in response to student problems and behaviors related to ADHD. Interview methodology for this study also strictly aligns itself with the four characteristics of focused interviews set for by Merton (1946, p. 541). The first characteristic is that subject interviewees are known to have been involved in a particular concrete situation: specifically, they have played a key role in originating solutions for students experiencing ADHD-linked issues, pre-diagnosis, which have interfered with learning and appropriate classroom interaction. Second, "the hypothetically significant elements, patterns, and total structure of this situation have been previously analyzed by the investigator" (p. 541): specifically this researcher has extensively experienced applicable situations and practically analyzed them as integral to my role as a classroom teacher for 17 years in grades ranging fifth through eighth. Characteristic of Merton's methodology, this practical content analysis led to arrival at a set of "hypotheses concerning the meaning and effects of determinate aspects of the situation" (p. 541), which this study narrowed to critical incidents and the related contexts and timings of interventions initiated by teachers within the regular education classroom. Thirdly, on the basis of this analysis an interview guide was created, outlined in the next section, which sets forth the major areas of inquiry "which locate the pertinence of data to be obtained in the interview" (p. 541). Lastly, interviews of teachers in this study are designed to be:

...focused on the subjective experiences of persons exposed to the pre-analyzed situation.

The array of their reported responses to this situation enables the investigator

- a) To test the validity of hypotheses derived from content analysis and social psychological theory, and
- b) To ascertain unanticipated responses to the situation, thus giving rise to fresh hypotheses.

In progressing through this interview methodology and the questions outlined in the next section, each teacher was interviewed face-to-face in the classroom the student was taught in, or the closest natural setting with audio from each recorded and stored for later transcription and analysis. Follow-up questions occurred on a case-by-case basis as need arose and/or further information required.

Overarching recommendations in the field of qualitative research (Myers & Newman, 2007, pp. 16-17) were followed, especially in regard to minimizing social dissonance, using mirroring in questions and answers, and flexibility. Specifically, social dissonance was minimized by reducing potential uncomfortable feelings in participants (Myers & Newman, 2007, p. 16) by emphasizing the researcher's role as a fellow teacher and peer, rather than as an official, administrator, or evaluator. Mirroring in questions and answers meant using words and phrases the subjects used as interviews progressed, which allowed the researcher to focus on the subjects' world without imposition and allowed the interviewee to describe and explain their world in their own words (Myers & Newman, 2007, p. 17). Flexibility in the semi-structured interviewing process meant using an incomplete script and "so requires flexibility, improvisation, and openness. The interviewer should be prepared to explore interesting lines of research, and look for surprises...[and] the interviewer should take account of subjects' differing attitudes"(Myers & Newman, 2007, p. 17).

Measures, Protocols, and Observations

Interview questions in the critical incident process encircled critical iterative events in intervention development, including: the teacher's first discovery of need to intervene based on ADHD-linked behaviors and issues, the initiation of new interventions, and subsequent adaptation, abandonment, or maintenance of the interventions. The timing of each critical incident was noted and related contextual information provided by the participants. Each teacher interviewed was expected to have experienced an assortment of critical incidents with the student of note and questions were designed to reveal the nature of each incident and the relevant contextual factors.

Questions were designed to reveal evidence of variations in originating and maintaining targeted interventions, including answers to the following questions:

- What was the teacher's initial experience with the student like?
- What characteristic behaviors were observed?
- What underlying dispositions did the teacher hold in relation to student issues?
- When did the teacher first discover that special interventions would be required?
- What intervention was chosen first and implemented by the teacher?
- How long did the teacher take to implement the first intervention?
- How long did the teacher take to adapt or abandon the intervention?
- When was a new interventions implemented?
- What was the role of the grade-level or building-level problem solving team?
- How much control does the student have over the experienced issues?
- What is the role of the teacher in dealing with these ADHD issues?
- What is the role of parents in solving these issues?

Questions actually utilized in the focused interview process were more inferential in nature and also designed to facilitate the accurate report of relevant critical incidents, which are subject to “the problem of losses and distortions of memory” (Merton & Kendall, 1946, p. 550). In order to expedite retrospective introspection the stimulus situation was re-presented by the interviewer to the extent possible at some point in each interview. Drawing from initial interview answers and previous experiences and practical analyses of similar situations, the interviewer approximated the critical incident conditions so that “subjects virtually re-experienced” the critical incidents to help their reporting of “significant responses and to have these linked with pertinent aspects of it...[all of which] also serves to insure that both interviewer and subject are referring to the same aspects of the original situation” (Merton & Kendall, 1946, p. 550).

Anchoring questions began each interview to engage the teacher’s memories of the student and then to establish an anchoring first experience where an intervention was considered and utilized. These initial questions were geared toward establishing a general narrative of the student and teacher as they became acquainted and familiar, but led the interviewee to the first critical incident where an intervention was first utilized.

Opening interview questions include:

- When did you first meet the student?
- Describe your first impressions of the student?
- What did you know about the student and how did you learn more?
- What was the student’s personality like?
- What kind of student was he/she?
- What was his/her apparent attitude toward school and work in the classroom?
- How did he/she interact with other students?
- How would you characterize your initial relationship with the student?

- What distinguished this student from his/her peers? What were the behaviors or issues?
- When did you come to “know” special interventions would be needed?
- What did you do once you knew?

Once initial interview questions established an anchoring narrative and the critical first incident of teacher intervention, phase two questions explored subsequent critical incidents, as well as exposing antecedent conditions and any prior student behaviors or academic issues not yet recalled. Questions led the interviewee in exploration of each critical incident, expounding on relevant antecedent conditions, and potentially reviving memories of prior student behaviors or critical incidents not yet recalled. In this way, phase two questions extracted further details about circumstances and interactions and followed Merton’s “re-presenting” protocol (1946, p. 550). Phase two interview questions included or approximated the following:

- How did the initial intervention work? How long until you altered what you were doing?
- Can you describe what happened next and when it occurred?
- What was the student need, exactly, and in what context did it show itself?
- How did the other students react to the challenging behavior?
- How did you react during the incident?
- What did you do right then, if anything?
- If no specific immediate action was taken in response, what were the reasons?
- If specific immediate action was taken, what was done?
- How did you feel at that time?
- Why did you choose that action or intervention?
- What did you do in response to the incident after your immediate reaction?
- How long did you wait to make a change or implement another intervention?
- Is this a typical intervention? Has this intervention been used exactly like this for others (tailored intervention)?
- Explain how the intervention worked out?
- Did your feelings change after reflection on the incident?
- In retrospect, would you have done anything differently? If so, for what reasons?

- Had you experienced this sort of incident with this student before?
- What did you do? How long did you take?
- What do you believe led to this incident (antecedent events and conditions)?
- What led to that previous event (antecedents of antecedent events or conditions)?
- What incidents have occurred since then?

Once phase one questions firmly established the anchoring critical first intervention incident and phase two questions thoroughly explored all critical incidents that could be recalled, other contextual information was sought through a retrospective frame of reference, executed according to Merton's work (1946, p. 550). His example questions and explanations are helpful models for the interviews conducted in this study:

“Now that you think back.....” He refers to introspection: "What were your reactions (or feelings, or ideas, etc.) ?" And, finally, he uses the past tense: "What were your reactions ?" This will lead the subject to concentrate on his original experience. Emphasis on such details as the components of this type of question may seem to be a flight into the trivial. Yet experience shows that omission of any of them lessens the productiveness of replies.

In order to elicit specificity, Merton's work also informed the interview methodology for this study, which combined the technique of re-presentation with that of the unstructured question. This is commonly necessary when “subject's report of his responses has been wholly unlinked to the stimulus-situation. Repeatedly, we see the necessity for establishing such linkages, if observed ‘effects’ are to be adequately interpreted” (Merton & Kendall, 1946, p. 551). Thus, interviews searched for specificity through unstructured questions in order to yield clues about the critical incidents from which implications can be drawn. “The interpretation of the

experimental effect rests on the weight of cumulative evidence drawn from interviews and not on mere conjecture” (Merton & Kendall, 1946, p. 551).

Phase three interview questions were naturally inserted toward the end of each interview in order to keep the chief focus of the timeline of critical incidents. Merton guides the process here as well, and the interviewer introduced new topics through transitions suggested by subjects’ responses or by the initiation of topics from the interview guide which have not yet been explored (1946, p. 552).

Thus, phase three helped develop a better understanding of the relevant contexts and the teacher’s disposition and collaborative approach related to ADHD-linked student issues.

After initial interviews were conducted, common categories became more distinct. Becoming particularly important in subsequent interviews was detailed exposure of evidence associated with the actions teachers took in response to student issues. This research seeks to understand not only the timing of action by teachers, but also contributing contextual factors. Two categories of teacher dispositions emerged which help contextualize the timing of interventions. The first is the teacher’s disposition toward student behaviors and control, which is synonymous with their threshold of tolerance or acceptance of ADHD related challenges as an integral part of a their professional duty. Evidence was sought concerning the teacher’s sense of ownership in controlling contributing contextual factors and of relative blame on the student for the ADHD issues. The second is the teacher’s disposition toward a collaborative, consultative, problem-solving approach as evidenced through consultation of the school team of professionals and the student’s parents in a collaborative manner.

In the positive perspective, a teacher’s disposition toward student behaviors and control relates to a relative-level of acceptance of ADHD-linked student behaviors as a normative

element of teaching students that must be effectively acted upon. In the negative perspective, it refers to a relative-level of teacher intolerance of ADHD-linked student behaviors as a normative element of teaching students. Since tolerance is interrelated with teacher attitudes toward students with ADHD-linked issues, evidence of self-reported attitudes was pursued alongside other evidence of tolerance found in teacher actions and behaviors. Teacher tolerance and attitudes were presumed to affect acceptability of ADHD-linked behaviors or issues in the classroom. This study therefore explored teacher tolerance as a tacit determining factor, contributing to the effective or ineffective intervention treatment of students exhibiting troubling ADHD-associated academic issues.

Revealing evidence of teacher competence in effectively detecting ADHD-linked issues and properly intervening also became more critically important. While specific and reliable measures of teacher competence were not sought directly, interview questions were designed to reveal evidence of control of antecedent contexts and timely and proximate interventions skillfully individualized to meet specific student needs. In short, evidence of teacher competency to a large extent overlaps evidence of overall intervention success. As previous research has indicated, a consultative, collaborative approach bolsters the effective competencies of an individual teacher through active inclusion of other stakeholders in the process. Therefore, direct evidence of consultation and collaboration with others was sought alongside indirect evidence of competence.

This study came to more explicitly explore a hypothesis that teacher dispositions and collaborative style affected how and when an intervention is implemented for any student with ADHD-linked academic issues, pre-diagnosis. Teachers with high tolerance (positive attitudes) and high relative levels of collaboration were presumed to be more likely to act in a timely

manner with tailored interventions. Those with low relative tolerances (negative attitudes) were presumed to be less likely to intervene in a timely fashion and/or are more likely to implement less effective, less individualized interventions. This study explored the connections between teacher dispositions toward student issues, their collaborative style, and the consequent teacher behaviors in response to ADHD-linked student issues.

Phase three interview questions were especially adapted to fit the participant based on initial interview questions and answers. Phase three focused heavily on exploration of topics related to teacher disposition toward student behavior and control and their consultative, collaborative style, including:

How many students diagnosed with ADHD do you think you teach this year?
Is that similar to previous years?
Have you recently interacted with other students exhibiting similar issues, but also not yet diagnosed with ADHD?
Has your experience with the student in question been similar to experiences you have had with others exhibiting ADHD-related issues?
What are the biggest challenges about teaching students with these sort of issues in the classroom?
I know you are not a doctor, but in your estimation, have the students you have taught with ADHD been properly diagnosed?
Have they been properly treated in school?
Have those known to be medicated been properly medicated?
What was the importance of your grade-level team in this intervention process?
How important was the building-level problem solving team?
How often did you meet with either team, or members of those collaborative teams?
How did it go with the parents through this process? What were your interactions like?
What kind of teacher will be best for this student in the future? What attributes must they have and which should be avoided?

In summation, each phase of the interview was effectively undistinguishable by the interviewee and questions continued to center on re-creation of critical incidents and their

timeline of significant events. Care was taken to avoid problems associated with an overreliance on the interview guide, as Merton cautioned:

The interviewer who feels obligated to conform closely to the guide may suddenly discover, to his dismay, that he has covered only a small portion of the suggested areas of inquiry. This invites a rapid shift from topic to topic, with a question devoted to each...

In view of the shortcomings of rapid shifts in discussion, we suggest the working rule: Do not introduce a given topic unless a sustained effort is made to explore it in some detail (1946, p. 554).

Accordingly, questions kept circling back to critical incidents, working forward and backward so that a timeline was established, ranging over one school year and documenting the process of intervention through successful amelioration of the targeted behaviors or referral for special education or medical evaluation.

Analytical Plan

Interview data was recorded and transcribed. A read through of all the data helped establish a general sense of the information and allowed reflection on its overall meaning. Grounded theory was relied upon heavily for methodological guidance in data analysis and ideation during data collection and extensively upon its completion. Heath and Cowley succinctly summarize the grounded theory work of Glaser, which informs the analytical plan of this study:

As the data are analysed and coded, ideas and potential insights will begin to develop which are recorded...Selection to fit preconceived or prematurely developed ideas is to be avoided, however creative these may appear. The researcher must be able to tolerate confusion, hard work and the tedium of the constant comparative method and wait for

concepts to emerge; deduction and verification are the servants of emergence. Ideas generated must be verified by all data and categories are constantly refitted to ongoing comparisons of incidents in old and new data, with the researcher who easily and persistently finds verification of ideas alert to the danger of forcing data (Heath & Cowley, 2004, p. 144).

Detailed analysis began with a coding process where information from each interview was organized and chunked into specific coded categories. Seventeen years of experience serving students with issues related to this study aided theoretical sensitivity, or the ability of the researcher to recognize what is important, give it meaning, and conceptualize the observations (Boyatzis, 1998, p. 8). Boyatzis's work on thematic analysis and code development (1998) also informed this study in perceiving themes or patterns and the lens through which to view them. Specifically, this study came to view the timing of interventions through the lens of teacher dispositions toward ADHD-linked issues as well as through the lens of teacher collaborative approach. In exploring each critical incident, recognition of "the codable moment" (Boyatzis, 1998, p. 11) came as a pattern in teacher dispositions emerged. In describing intervention processes, participants regularly described their feelings toward the student (disposition) and related support within the school community as relevant. While participant knowledge and understanding of best practices in serving students with ADHD related issues was mostly implicitly evidenced, an explicit pattern emerged in self-described dispositions toward students and the support of the school community.

The central categories that emerged included: teacher disposition toward student behavior and control; teacher consultative, collaborative problem-solving approach; and timing of key intervention events. The category of teacher disposition included explicit and implicit teacher

attitudes and behaviors. The category of teacher consultative, collaborative approach included evidence of pertinent interactions with parents and other school personnel.

These three codes allowed data on the central themes to be compiled and analyzed together and additional layers of complex analysis to be explored. Themes were interconnected into a storied narrative. Each theme was analyzed for each individual case and across different cases with an emphasis on letting the data speak for itself. Grounded theory provided ongoing guidance where, “Comparison and emergence are stressed again and again, with fit and refit being terms used in relation to category development” (Heath & Cowley, 2004, p. 146).

Extensive memo writing was utilized in order to reflect on and write about how the researcher related to the participants and the critical incident phenomenon. This aided in establishing connections between the researcher and participant teachers and contexts under study. This was established through sympathy and empathy with the participants’ actions to understand their perspectives and worldviews (Saldaña, 2015, p. 43). While thematic analysis began with recognizing the codable moment, encoding it consistently required continual reflection about the data (Creswell, 2014, p. 184). Creswell’s work guided the entire process of coding and analysis. Open coding generated categories related to timing of interventions, teacher disposition toward ADHD, and teacher disposition toward collaboration. By positioning the timing of interventions within the context of the other two disposition categories, persistence in adapting interventions emerged as the story was explicated by the interconnection of these categories. Ultimately, all data were considered and used to shape a description which characterized the findings. The narrative passage were used to convey the findings of the analysis with detailed discussion of several themes and interconnections.

A final step in data analysis was interpretation of meaning of the data describing lessons learned, interpretations, and meaning derived from comparison of the findings of this study with information from the literatures on ADHD. Meaningful quotes from interviews were be intertwined with interpretations in the narrative to help increase the power and of the message.

Summary

In summary, interviews were conducted with elementary and middle school teachers whom had recently interacted with one or more undiagnosed students exhibiting ADHD-associated behaviors or academic issues. Teacher were solicited via email and interviews were conducted in the classroom the student was taught in, if possible, and limited follow-up information was sought via email. Interviews were recorded, transcribed, and analyzed based on three central categories of teacher dispositions, teacher collaborative approach, and timing of key intervention events. These themes were then analyzed individually, but also threaded together into a narrative that presents the interconnected layers involved in ADHD intervention in the classroom.

It was expected that significant variation would be found in the dispositions and collaborative style exhibited by teachers in this study, which would affect treatment of students with ADHD-linked behaviors and issues. Those found to have more tolerance are predicted to have more positive experiences with students exhibiting ADHD-linked issues, but only those who also exhibit relatively high levels of collaboration will be capable of successful tailoring of interventions.

Chapter 4: Findings

Introduction

The purpose of this study is to address the educational process preceding any possible ADHD-diagnosis by examining the timeline of classroom-level interactions that guide the student to eventual academic success, or to a medical referral. Specifically, the current study presents the research questions: What do teachers do to help students with ADHD-related issues in absence of an established plan of interventions? What is the timeline of those actions? To that end, this field study utilizes elementary and middle school teachers' interview responses to examine multiple questions: When do teachers first discover and determine special interventions will be necessary for students exhibiting issues with inattention, hyperactivity, or impulsivity? What is the teacher's course and timeline of action in originating and tailoring a plan of interventions for a particular student? What are the relevant school contexts of these actions? How important is the teacher's school community in this process? What is the disposition of the teacher toward the student's behaviors, self-control, and the process of mitigating these issues through tailoring interventions for the student?

While this study generally addresses the process leading to an ADHD diagnosis, it is not concerned with the actual medical diagnosis, or whether or not students subject in the interviews were, or will be, later diagnosed with ADHD. Rather, the focus of this study is on the timeline of school interventions in cases where teachers perceive ADHD-associated issues and must proceed with no established plan of action for the particular student.

Due to security provisions that safeguard the private information of students, specific identification of those with or without an ADHD diagnoses was not available for this research. Accordingly, directly isolating teachers of specific students with ADHD-linked symptoms with

no ADHD diagnosis was not possible. Therefore, teachers were solicited based on a self-realized need to *originate* effective solutions for any student with genuine inattention, hyperactivity, or impulsivity issues in a general education setting, without the supporting benefit of a previous-year's plan (e.g. behavior plan from last year). A student already diagnosed with ADHD would typically also already have a school plan of interventions in place, eliminating a need for subsequent teachers to originate effective solutions. By emphasizing the teacher's need to *originate* solutions, this study recruited participants who supposed themselves as the leading interventionist for these students and unlikely to have a previous plan to work from or adapt. This recruitment approach garnered 16 respondents who taught students that were believed to have ADHD-linked behaviors and academic issues, but with no effective plan of intervention. The interview process did reveal that 12 of the 16 students, subject in the interviews, had no known ADHD diagnosis. These 12 interviews are the primary data set for this study.

The remaining four interviews revealed students with an established ADHD diagnosis, but the teachers nevertheless believed themselves originators in establishing an effective educational intervention plan. These four diagnosed subjects provided useful examples of the parallel similarity and nearly indistinguishable challenges involved in effectively individualizing interventions to serve the needs of students with these issues, with or without a diagnosis. Of the four students previously diagnosed: one was an unmedicated kindergartener with no previous plan of intervention; another an irregularly medicated first grader with an inadequate intervention plan established in kindergarten; a current third grade transfer from another school district accompanied with limited shared information and no specific plan of intervention; and, lastly, an eighth grade student with no official plan of intervention and whose family opted to quit utilizing medication. These four interviews contribute a secondary, post-diagnosis perspective that

enhances the narrative and enrich the examination of the research questions about the pre-diagnosis educational intervention process. The interview discussions about the remaining 12 undiagnosed students provide the primary data to answer the research questions since these students have not been officially subject to the ameliorative effects of mitigating measures.

Accordingly, the primary data set includes discussions about 10 boys and two girls found to have issues with inattention, hyperactivity, or impulsivity. This sample is in proportion generally corresponding with actual diagnosis data, indicating 90% of all children diagnosed with ADHD are boys (Purdie et al., 2002, p. 63). Similarly, ten of the twelve undiagnosed student subjects are elementary aged and only two are middle school aged. Thus, the mean age of student subjects of this study is 7.8 years, which resembles the known average age of seven years for all ADHD diagnoses (CDC, 2017).

All 16 respondent teachers in both the primary and secondary data set are women, an unsurprising actuality since 89% of all public elementary school teachers and 73% of all public middle school teachers are women (Taie & Goldring, 2017, p. 3). Five of the 16 respondents are special education teachers supporting students in the regular education classroom. Three of these special education teachers are included in the primary data set since they serve undiagnosed students whose IEPs are not directly related to, or specifically designed for, ADHD-linked issues.

In order to frame participant responses about the research questions, it is especially important to understand how teachers, parents, and school administrators interact with and communicate information regarding a disability like ADHD and the related academic intervention plans. While the general process of student evaluation was discussed in previous chapters, the specific procedural nuances involved provide a valuable and universal context for

participant responses. The Individuals with Disabilities Education Act (IDEA) requires school districts to ensure that eligible students with disabilities receive appropriate special education and related services, known as a free appropriate public education (FAPE). Schools are required to identify, locate, and evaluate all children with disabilities who need special education and related services. A school professional, like the participants in this study, may ask that a child be evaluated to see if he or she has a disability, or parents may contact the child's teacher or other school professional to ask that their child be evaluated. Parents can request an evaluation to determine if their child needs special education or related services because of ADHD. For instance, "a parent might request an evaluation, if the student has received a diagnosis of ADHD outside of school, to ensure that the school is aware of the student's disorder and recognizes the ADHD as a disability..." (U.S. Department of Education, 2016, p. 14). Parental consent is required for an evaluation, which must be completed within a reasonable time after the parent gives consent. The evaluation results are used to decide the student's eligibility for special education and related services and to make decisions about an appropriate educational program for the student. A group of qualified professionals and the parents look at the student's evaluation results. This group usually, but not always, includes a school psychologist, counselor, administrator, classroom teacher, and special education teacher. Together, they decide if the student is a "child with a disability," as defined by IDEA, as well as determining if the student requires special education and related services because of the disability. A student with ADHD may be eligible under the categories "specific learning disability", "emotional disturbance", or "other health impairment". "Other health impairment" was "specifically amended in 1999 to include ADHD as an example of a chronic or acute health problem that could be found to adversely affect a child's educational performance" (U.S. Department of Education, 2016, p. 7).

A diagnosis of ADHD is evidence that a student may have a disability and the Office of Civil Rights presumes, unless there is opposing evidence, that a student with a diagnosis of ADHD is substantially limited in one or more major life functions. Once a student is identified as having a disability and needing special education and related services, the same group of qualified professionals establishes a written Individual Education Plan (IEP), which is a required, legal documentation of the elements of an individual student's FAPE. IDEA does not require a school to conduct a medical evaluation for an ADHD diagnosis. If a school believes that a medical evaluation by a licensed physician is needed as part of the evaluation to determine whether a child suspected of having ADHD meets the eligibility criteria of the disability categories mentioned above, the school district must ensure that this evaluation is conducted at no cost to the parents. Parents of children suspected of having ADHD-related issues can refuse the initial permission to evaluate, any recommendations that are developed from internal or external evaluations, or even refuse share information with a school about a medical diagnosis.

If a student is found to have a disability, but unqualified for special education and related services, the school must still consider coverage by Section 504 of the IDEA, which specifically prohibits discrimination on the basis disability in programs or activities receiving Federal financial assistance, like school districts. Similar to special education IEPs, schools often document the elements of an individual student's FAPE under Section 504 in a document typically referred to as a "504 Plan". Unlike the special education IEP documentation, there is no specific requirement for a Section 504 Plan or even what the plan should contain (U.S. Department of Education, 2016). A 504 Plan often includes the regular or special education and related aids and services a student needs and the appropriate setting in which the student should receive those services. This is referred to as the student's "placement". Decisions about

placement of a student under Section 504 must be made by a group that includes those knowledgeable about the student, the meaning of the evaluation data, and placement options. In this way the 504 team is similar in composition to an IEP team. A written 504 Plan is often a useful way to document the identification process and how the needs of a student with disabilities are being addressed. The written plan also serves as a primary way to communicate to school personnel the information needed for successful implementation, now and in the future. A Section 504 Plan for a student with ADHD typically includes behavioral interventions, assistance with organization, and additional time to complete assignments or tests (U.S. Department of Education, 2016, p. 4) and are periodically reviewed to ensure continued fit.

Furthermore, the Americans with Disabilities Act Amendments Act of 2008 broadened the definition of disability and demanded that the determination of whether an individual has a disability not demand extensive analysis (U.S. Department of Education, 2016, p. 5). This effectively increased protections for those students who do not qualify for a special education IEP and some Members of Congress emphasized that “it is critical to reject the assumption that an individual who has performed well academically cannot be substantially limited in activities such as learning, reading, writing, thinking, or speaking” (U.S. Department of Education, 2016, p. 12). The act expanded the list of examples of major life functions to include concentrating, reading, thinking, and functions of the brain. The Act also demanded that school districts must not consider the ameliorative effects of mitigating measures when determining the impact of the impairment.

The impact, therefore, of a student’s ADHD on a given major life activity, such as concentrating or thinking, must be considered in the student’s unmitigated state to determine whether a substantial limitation exists. For example, if a student requires

medication to address an impairment, the ameliorative effects of the medication cannot be considered when evaluating the student for a disability (U.S. Department of Education, 2016, p. 5).

Finally, it should be emphasized that there is nothing in Section 504 that requires a medical assessment in the school's process of determining a disability (U.S. Department of Education, 2016, p. 23), and many school districts choose to implement intervention strategies prior to conducting an evaluation for students experiencing challenges at school, regardless of whether or not the student is suspected of having a disability (U.S. Department of Education, 2016, p. 15). This is true for the school district in this study and individual timelines of intervention strategies for students experiencing pre-evaluation challenges is the study's primary focus.

Overview of Findings

This study is focused on the actions of teachers in response to challenges in originating solutions for students with inattention, hyperactivity, or impulsivity issues. Two of the themes that emerged in the findings support prior research on post-diagnosis ADHD intervention demonstrating that intervention must be individualized through an ongoing consultative, collaborative, problem-solving process that monitors using assessment data (George J DuPaul & Stoner, 2014, p. 143). This study centers on the predominant theme of teacher timing and individualization of interventions, during a single school year with the student. The central theme is explored through the lenses of participants' problem-solving approach and their personal attitude toward the student and the associated challenges. This study operationally distinguishes the most successful processes from the less successful in terms of the teacher's self-reported process-oriented success intervening, as well as the outcomes-oriented success

evidenced in self-reported progress toward targeted student outcomes. Process-oriented successes were generally marked by repetitive intervention adaptations, or additions, based on ongoing evaluations of data, which gradually improved the apparent fit of the intervention set to the described student issues. Outcomes-oriented successes were marked by teacher descriptions of incremental ameliorating effects in the targeted areas of student behavior and learning. These self-reported process and outcomes success markers help us appraise relative effectiveness of individual treatments for examination and discussion.

Thus, this study finds that effective school treatment for students in the incubation stage of an ADHD diagnosis involves a progression of interventions that begins within the first few weeks of the start of school, is ongoing, iterative, and persistent. Furthermore, teacher responses in this study indicate that persistence in individualizing interventions through an entire school year is required for success and is driven largely by the individual teacher's sense of duty, empathetic attitude toward the student, and the collaborative participation of the school community and parents. The most successful teachers' adaptability and flexible thinking allowed more extensive exploration of options and the ability to fail forward more smoothly than their counterparts. This translated into a year-long rhythm of trial and adaptation which developed the individual fit of the intervention set to targeted student needs. This sort of timeline, of ongoing evaluation and adjustment, was found only by teachers exhibiting high levels of collaboration and technical knowledge about ADHD, but also with the practical wisdom to efficiently improvise and adapt within a fluctuating contextual environment. Their wisdom also seemed to have a mitigating effect on potential and actual stress involved in serving students with ADHD related issues in the context of managing an active and sometimes hectic classroom environment.

Like most teachers in the study, the most proficient teachers greatly valued the support of the school community in the process of serving students with ADHD-related issues, but with a subtly different perspective than their colleagues. They tended to view the school community primarily as an indispensable resource to increase the personalized service to the struggling student, rather than primarily as a mechanism to help them personally share the stressful load of serving a challenging student. They tended to have a collaborative, consultative problem-solving approach that allowed them to leverage the power of the school community to increase the personalization of interventions, while simultaneously increasing the student's sense of belonging and connectedness with the school community. This often meant utilizing members of the school community to work with the struggling student for brief periods of time, including office staff, administration, para educators, librarians, counselors, older or younger students, and other classroom teachers. A noticeable and common effect of the most proficient teachers' attitudes and actions was that their development of personalized interventions coincided with their development of a positive, personal relationship with the student.

Thus, the teachers serving students struggling with inattention, hyperactivity, and impulsivity best were more empathetic, consultative, and collaborative, which correlated with a more persistently adaptive timeline of interventions. This study finds that the most successful teachers did not necessarily deliver interventions earlier than their counterparts, but were more likely to persistently personalize effective solutions throughout the entire school year through ongoing evaluation and adaptation. Consequently, they effectively exhausted more lower-intensity educational interventions before leveling off their efforts, which decreases the likelihood of premature and unnecessary transition to more intensive interventions, like the introduction of medical interventions.

Discovery of Need to Intervene

Since teachers directly shape the extrinsic factors which can mitigate or exacerbate student issues with inattention, hyperactivity, and impulsivity (Graham, 2008, p. 16), improper accounting of these factors causes failure to effectively personalize instruction and interventions, which is the origin of most learning, behavior, and emotional problems in schools (Adelman & Taylor, 2000, p. 119). The non-accommodating environment makes ADHD-related issues a student handicap (George J DuPaul & Stoner, 2014, p. 248), so schools should focus first on improving environments and systems that affect learning, behavior, and emotional problems (Adelman & Taylor, 2000, p. 121) and, for most students experiencing ADHD-related issues, deliver interventions as early as possible (George J. DuPaul, 2012, p. 409). This study sought to understand the application of this ideal of timely and personalized intervention in the natural classroom setting by interviewing teachers about originating and sustaining effective interventions in service of the success of their student experiencing inattention, hyperactivity, or impulsivity issues. In order to preserve the confidentiality of participants and students, all names referenced in this study are pseudonyms.

The findings of this study indicate that most teachers with undiagnosed students experiencing issues with inattention, hyperactivity, or impulsivity determined almost immediately a need to provide special interventions for the subject student. While proceeding actions in service of the struggling student varied across participants in terms of personalization and persistence of interventions, all teachers in the study originated one or more intervention strategy within the first month of the start of school, with seven of the 12 originating an intervention within the first week. Lila, a middle school social studies teacher discussed her introduction to her eighth grade student and the characteristic behaviors in those first days,

“Yeah, it started early and the student came to me with nothing in terms of a plan that had been recorded.” She went on to say:

He was very scattered, flighty. All the things that lead to being inattentive and just really struggling to stay on task. Very work avoidant, even from the get-to-know-you activities...from day one...So just a lot of juggling and balancing from within the first week. I knew it was going to have to be done for him. -Lila

Explanations from other respondents were characteristically similar, from eighth grade all the way down to the kindergarten level, varying mostly in extremity. A veteran kindergarten teacher described the early behaviors of her student:

So in August when... he's spinning around on the floor over there and everyone else is down here at the floor listening to a story and [he's] rolling around. Those are examples of things I'm like “Yeah, there's something going on there.” -Carol

Jamie commented of her kindergarten student, “Very bright. I could tell from day one” but “there were times where, before we figured out something that would really work for him, that he would get just kind of all over the place and be bouncing.” Annette, a kindergarten teacher with extensive experience with ADHD, also stated she knew within the first week that her kindergarten student would need special interventions. The student had immediate challenges with sitting still, blurting out, making inappropriate comments, socializing instead of working, putting his hands on other students, etc. “I don't know what it is, but I can just kind of tell if they're doing it because they're trying to be ornery, or if they're doing it because they can't help it.” This early distinction about the student’s ability to exert control over the concerning behaviors seems to be the key factor in deciding to initiate interventions. Julie alluded to this

initial challenge with her kindergarten student, who “would bounce from place to place and never really get into any of the activities at any given time because she had to constantly be moving.” Julie believed the characteristic behaviors were easily detected in her student, “whether it was that she didn't understand what we were asking her to do, or whether she just couldn't do what we were asking her to do.” She later expressed that she “can tell the difference between someone who is immature and someone who is really struggling with an issue.”

While most students subject in the interviews were overtly showing signs of ADHD-linked issues in the first week of school, many teachers expressed thoughtful reserve before intervening immediately in the face of the challenge. A second grade teacher noted:

So the first week of school was challenging. I'm not going to lie. I mean... I kind of like to just get to know them first, so, I'm not one that would put anything in place, day one, without knowing him or his needs. - Christine

Laura, a fourth grade teacher analogized of the student, “...unfortunately he has the attention span of a gnat and I think the longest time I've ever clocked him to stay with one particular thing was five minutes.” Like most teachers in the study, Laura considered these observations within a greater context before deciding on specific interventions. This student, for instance, had recently been transferred from another school within the district “because the parents were not happy with the program at the other building”, a circumstance not uncommon with students who struggle because of a disability. The mother of the student had reported to the teacher that she “felt that all the teachers were against my child.” This student was “very verbal and lots of outbursts lots of hands on other people”, and the decision to intervene coincided with the process of figuring out the specific needs of the student. “The first week I really did observe

him. I wanted to see where and who he should be with, personality-wise, in the classroom and what he can handle.”

While the discovery of need first involves detecting characteristic behaviors, then deducing their cause, all teachers in the study did detect characteristic behaviors in the first week of school, even when they did not yet “know” interventions would be necessary.

It should be noted here that diagnosed ADHD can manifest as predominantly inattentive, predominantly hyperactive-impulsive, or as a combined type, depending on which symptoms are strongest (U.S. Department of Education, 2016, p. 10). Students manifesting predominantly inattentive issues are less likely to come to the attention of teachers because they are less impulsive and less disruptive (U.S. Department of Education, 2016, p. 13). As a result, it is also more likely that teacher respondents entered into this study based more on experiences related to disruption and impulsivity, rather than challenges merely with inattention. The interview data reflects this, as all individual students discussed in the study were, at times, noticeably disruptive or impulsive. Statements similar to, “It was like her motor was running the whole time.” were common for most subjects in this study. Other examples of first impressions of the struggling students included:

It was when I started realizing that even just the daily routine of coming in, getting his materials put away, getting started in his work, that that became a real struggle for him after two weeks. – Kindergarten

He didn't show interest in the starting get-to-know-you activities like, you know, making a poster about himself, like an all-about-me poster. Or like if they were doing a group activity, like they were building towers out of spaghetti and marshmallows. You know,

all those back-to-school activities, and he really didn't want to do one. So it wasn't like he wanted to do something else. It was just that he didn't want to do that. So he hung around the group. ...and he would just talk to them and distract them. – 2nd Grade

If you let him be, he does not get anything done...And he's playing, you know, messing with pencils or he makes a lot of noises, noises, noises. – 2nd Grade

Like he can't even sit beside somebody else without putting his hands [on them] and it's not meant in a malicious way. – 4th Grade

Very disruptive, making farting noises, making just all these little different sounds. His chair is constantly moving, squeaking, squeaking, squeaking. Everything I said had a comeback after it. "Well why?" OK. Just those gateway behaviors is what we call them. – 4th Grade

The ability and skills, he had them, but he didn't know how to focus his attention to enact upon those skills and abilities without an adult being right there with him. – 8th Grade

None of the interviews revealed isolated inattention behaviors by any of the subject students. “The fact that these students do not show the same impulsivity or overactivity as some other students with or without ADHD does not in any way diminish [their] substantial limitations...” (U.S. Department of Education, 2016, p. 13). The obscure nature of inattention in absence of hyperactivity or impulsivity behaviors highlights a limitation of this study in generalizing the timing of the discovery of need by teachers. While this is both a limitation of the study and a serious issue in adequately serving students who might require intervention, it does not interfere with the examination of the practical actions reported by teachers, including what they actually detected and how they subsequently responded.

This study also finds that participant teachers' ability to accurately discover a need to intervene was somewhat limited by availability of prior information to help contextualize initial observations. Since classroom teachers typically only experience a single school year with students, they usually do not meet until the beginning of school in August. The schools involved in this study generally have a system in place to share important transitional information about their students, from one grade level to the next. For instance, if a student had any noteworthy behavioral, academic, or medical issues in a previous year, a brief summary of this information was usually provided to the current teacher prior to starting the school year. While this systematically relays special education IEP and Section 504 Plan information, it can also include less formal, but otherwise helpful information about the student, like when they were struggling with inattention, hyperactivity, or impulsivity. For instance, third grade teacher Donna had her student come to her in October from another school district. The student was one mentioned in the secondary data set with an ADHD diagnosis and accompanying IEP from a previous district. However, the foundation of the established intervention plan was based on a "three strikes" behavior plan that primarily used negative consequences to redirect behavior:

When I got her we started out great, but the discipline she had before at her school was three strikes, you're out. So we tried to get away from the negative part of it...So when she came we just kind of had to figure out what would work and what didn't.

This highlights the common challenge in serving students with ADHD-related issues, with or without a diagnosis. Namely, that each new school year brings a new context with varied contributing factors. Established plans in one context are not easily translated to another context unless they are extremely similar. Even in similar contexts, students continue to grow, develop skills, and mature year to year. Students staying in the same building year-to-year allows greater

access to information for the next teacher, especially when the former teacher remains in the building as a primary source. Students entering the district for the first time are accompanied by less information and channels of access are more indirect. A special education teacher described her involvement helping the classroom teacher in determining the intervention needs for an incoming fourth grader with an IEP:

She just knew... that this was not going to be a typical fourth grader and so she came to me and said "I know that he moved from Utah. Do you have any information? Is he on an IEP?" And so, then we looked up records and kind of got into all of that. And that's when we discovered... that he did have an IEP, but that they were home schooled and then we kind of went from there. And then through... observations and working with the teachers... we moved into the evaluation process, but that was just because the IEP had expired...but also the IEP was only speech and language services, so it wouldn't have been able to fulfill his needs anyway. - Martha

Anticipatory information seemed to shape the initial attitudes of teachers toward students, more than shaping direct actions. A veteran second grade teacher, for instance, avoided seeking too much pre-emptive data, which she implied could negatively bias her process of getting to know the student as an individual:

So the first grade teacher, and kindergarten also, had similar issues, but I really didn't know because...some of those things, especially when I get my new kids each year, I don't want to [know right away, because] I want to get to know them [first]. I don't want somebody to come to me and say "This kid's terrible with behavior!", "This kid...", you know?

Conversely, a fourth grade teacher in her first year teaching found the preemptive communication from the previous teacher helpful in preparing a positive mindset to address the likely challenges ahead. The subsequent materialization of the forewarnings, however, were no less problematic for her:

Before [he] got to me I was very optimistic, I was like "I'm going to change this kid and do everything I can". And then the first day of school was a nightmare...I had to call his parents the first day of school. I was just so frustrated. - Patricia

Christine, a second grade teacher new to the district, was not as preemptively informed, but utilized last year's teacher almost immediately after observing characteristic behaviors at the start of the school year. "Well, I went back to the first grade teacher and just said 'OK, what worked? Because I've got to come up with something'. And that's when she was like 'Well, you know this is what we tried...?'"

Lack of previous student data is most pronounced in kindergarten, the official year of entry into compulsory schooling for most students. While many attend preschool, kindergarten is universally the official start to public schooling and so there is little to no previous data to draw from at the start of school. Many kindergarten teachers brought this issue up in their responses. One generalized:

When they come into kindergarten the first week most of them are very quiet and intimidated because it's their first time being in a school this large with this many kids. It's new and they don't typically know a lot of the kids in class. And so, they're just very quiet and shy and reserved. Once we get into a routine and everything starts changing and

they're comfortable, that's when they start to relax and the other side of their true colors start coming back up.

Speaking of a specific student, another kindergarten teacher commented:

I didn't [know that we'd have to start special interventions as we started school]. I knew that he was bright, because it's easy to figure out, even on day one, kind of where their skills are. But I didn't know that attention-wise, he would really struggle. I think that's the downfall when we get kids in kindergarten. We meet him at kindergarten round up. It's such a brief glimpse into what we're going to experience. - Jamie

In the same building, another teacher explained her experience of discovery of need in the context of familiarizing her kindergarten students with the routines of school:

At the beginning I spend a lot of time teaching them routine and I spend a lot of time teaching them expectations and doing those things. So when [the student] could not follow routines and when [the student] could not follow the expectations and was falling apart and couldn't get in line. And you notice that out of 21 kids, 17 can get in line without any issues. And three of them are not in line because they're crying because they missed their mom and want to go home and take a nap. Those are different than [this student] who is pushing and ... starting at the front of the line and making it all the way to the back of a line before you leave. So...things start to ... become red flags that there are some issues there because he's the only one that can't. - Carol

Annette added that these younger students are also much less self-aware than older students, "It's just hard when they're five because they don't really understand why they're doing it. So it's hard. It's hard for them."

In contrast, teachers in older grades tended to find students more aware of the issues they experience and, consequently, include students more directly in evaluating needs and adapting interventions. Lila's eighth grade student, for instance, informed her that his other teachers sometimes overprotected him:

He's expressed this to me as well, [that] some of them he feels are too "coddly" and too motherly. It really annoys him and so he just loses it. "Just stop treating me like a baby, stop treating me like a child!" And others, he says are too harsh, too strict. They're always yelling at him.

Jeanette sought similar input from her eighth grade student, who was one of the four aforementioned students already diagnosed in the study. With no established plan of intervention, it placed Jeanette in similar difficulty as other respondents with students having no diagnosis and no plan. While Jeanette cites her considerable elementary experience as foundational to her confidence in moving forward with originating some sort of plan of action, she felt it important to seek student input to better inform the process:

"What do you prefer? Let's try all of them. What you need?"... And they wrote a letter to me. "Tell me what you need from me this year." And so of course in [his] letter he let me know, "I have a hard time staying focused and I get in trouble a lot."

By including the student more fully in the process, she felt intervention individualization could be achieved more effectively. Younger students have less of a capacity to contribute directly to the intervention process, so teachers are more limited and must exhaust other sources of data to originate a plan.

On rare occasion, students also arrive in kindergarten with an ADHD diagnoses and Maria's experience with a diagnosed, but untreated kindergarten student provides another comparing example to the undiagnosed students this study centers on. While Jeanette's middle school student had also arrived with a diagnosis but no intervention plan, Maria's diagnosed student was too young to ask for direct input and had no school experience beyond preschool for supporting adults to draw from. Maria, a special education teacher, runs a center-based program for elementary students across the district requiring a more restrictive placement due to emotional disturbance. In this case, her future student was exhibiting severe inattention, hyperactivity, and impulsivity issues in a preschool also managed by the district. The severe issues experienced in preschool prompted the initiation of a supportive intervention plan for kindergarten. While Jeanette could speak to the student, parents, and other teachers about previous years' struggles and successes, Maria's student had only a preschool experience to inform the initiation of her plan. Consequently, she went to observe the child in preschool directly, months before the start of kindergarten, to gain more data. She was invited to go observe to help the transition to kindergarten, "So, I was just in on the planning, the initial planning."

The difference for Maria and her diagnosed student compared to the other undiagnosed kindergarten students discussed in the study was the opportunity to observe and participate in the initial intervention plan, starting in the previous school year. She was able to observe the student's behaviors first-hand, months in advance of teaching the student, but what she observed was not unlike the behaviors of undiagnosed students discussed by other teachers in the study:

The teacher had a small group, and she had the kids sitting in a circle on the carpet, and he could not stay in his own space and he was up and in front of her, that just active body

everywhere, interrupting. She could hardly teach because he had to have attention. But then he couldn't even focus on what it was he wanted to ask her.

Likewise, Maria's perspective on the acclimation of kindergarteners to the culture of school was parallel to those speaking of undiagnosed students, "When kindergartens first come, a lot of them it's their first experience in a structured classroom and so it does take them a little bit of time to get on with the routine." Maria worked through many intervention adaptations in an iterative process that was generally indistinguishable from others in the study who persistently individualized for undiagnosed students through the school year. A significant part of her process was bringing the student's mother along in understanding his needs and capabilities:

I think she's in a place of denial about his ADHD maybe. I don't think she realizes how different he is from a typically developing child. We've had a lot of conversations about that. She disagrees with what he can do. I think we've had a hard time getting her to understand that what he can do at home is different than what he's able to show us he can do here, and that her knowing the differences between the settings like home. He's the only kid who has her attention all the time.

Kindergarten teachers of undiagnosed students in this study disclosed similar accounts about getting the support of parents and the rest of the school community, after discovering a need in the classroom. For instance, parents often have not had prior encounters with feedback related to ADHD-linked behaviors from others working with their child, creating barriers to introducing interventions:

I mean, a lot of the parents in kindergarten, they don't want to hear that there's anything wrong. Kindergarten is that age [where] typically they've never heard it. Whereas, they

get to third, fourth grade, they've heard it. They just don't want to hear it. They have never heard it typically in kindergarten. - Carol

In these cases, the parents resist pushing forward with interventions because it is so early in the school process for their child. They often want to wait and give the child more time to build the skills required to be successful without special interventions or the potential stigma of a medical diagnosis.

Most parents aren't wanting to take him anywhere or see anybody or anything like that until after kindergarten. I've had a few [parents of students with ADHD-related issues] who are like “OK, it's time”, you know, because they have [ADHD], or the dad has it, or the mom has it, or something, you know. So they're like “OK, it's really affecting his education, so we're going to take him somewhere”. –Annette

Even when parents do agree to seek medical intervention, they can be guarded with information on the results. Maria's diagnosed kindergartener, for instance, was not actually known to be diagnosed, by the teacher or school, until well after the start of kindergarten. “In the beginning of the time that I had with him, I did not know that he had a diagnosis of ADHD. No one told me.” Maria had observed the typical behaviors in her pre-emptive visit and again, daily, at the start of the kindergarten year, but was trying to build support without knowing the student had already been diagnosed:

I felt like after spending a little bit of time with him that that's what was going on. I was trying to, in my mind, was trying to convince her that she needed to go have him evaluated. You know, and I didn't know that she'd already done that and gotten the diagnosis, just chosen not to treat it or you know what I mean... So we had a little bit of

a transition issue there where that fell through the cracks somehow. So I didn't know, but I was, I was laying the groundwork.

For other teachers with undiagnosed students, groundwork was often laid the previous year in the form of anecdotal observations and interactions with parents shared with respondents by the previous teacher. Christine went on to explain that she knew her second grader would need specific interventions, “probably a couple of weeks in”, with the former teacher providing helpful information, including parents desire to limit accommodations:

[Teacher from last year] just said that he needs a lot of redirection. He gets easily distracted and he's not...really on grade level with reading and math. So, I knew there was some type of history there with behavior. They also had mentioned that the parents didn't want any like accommodations and that they tried many different things in the classroom and out of the classroom and they really couldn't figure anything out.

Another second grade teacher sought input from the previous teacher after observing characteristic behaviors in the first three weeks of school and came away with an initial intervention idea of using a timer to chunk his on-task activity:

And the first thing I did is I went to his first grade teacher just to see, because he's very bright. I mean...he scores well on tests, does well academically, very bright. But ...if I ... had not [started to intervene], he'd be lost. He's easily lost... just he cannot focus. He just really struggles with focus. So the very first thing I think I tried was the timer.

On the other side of the table, school community support teams discussed in this study were generally cautious in pushing forward with more intensive interventions in the early grades, especially with pushing forward with referral to evaluate. Frustration was expressed by only one

teacher in the study over her unsuccessful attempts in rallying support for moving forward with referring kindergarten students with ADHD-related issues for special education evaluation:

Your feelings about students, either positive or negative attributes, ... are not validated at all. And so when you bring these up you get a lot of “Just wait.”, you know, “Just give them some time, see if they outgrow it.” So...the joke is, “Wait 'til they get to second grade and they'll fix it.” - Julie

Invalidation of teachers' initial troubles by school problem-solving teams was an isolated concern across all respondents, with Annette countering, “Oh no, they don't do that. It's done really well.” While parents and building-level support teams are essential to the process of successful intervention, a theme discussed later in this chapter, the classroom teacher is the prime mover in the opening attempts to intervene and subsequent adaptations. This study finds that discovery typically coincides with a provisional intervention attempt.

Timing of Interventions

Once teachers determine intervention is needed, a predictable series of key events are managed by the teacher. The key milestone progressions of pre-diagnosis intervention explored in this study are diagramed in Figure 1, from discovery of need, leading eventually to student success in the targeted area or to referral for evaluation for more intensive educational services or medical intervention.

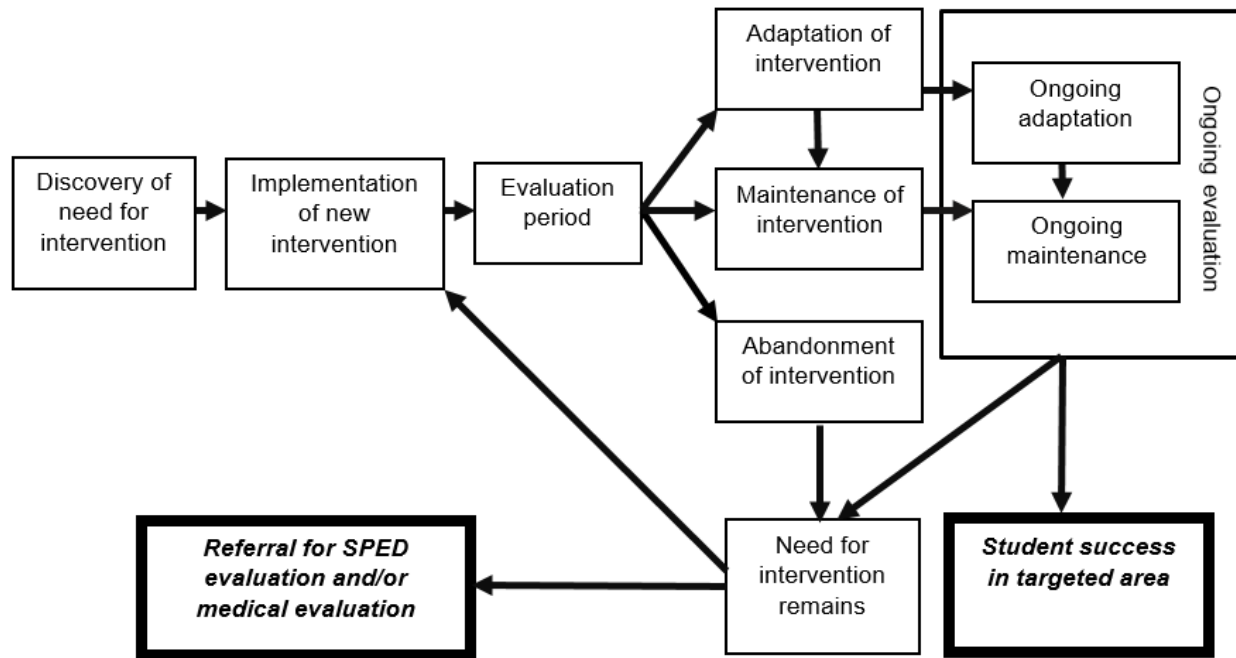


Figure 1: Flowchart of pre-referral intervention process. This chart shows the iterative process of fulfilling student needs prior to any medical or special education referral.

While initial discovery and intervention occurred within the first month of school for all participants in the study, adaptation and persistence varied widely through the school year. The major finding of this study is that the most successful teachers were more persistently involved in an iterative process of adapting, abandoning, and implementing new interventions through ongoing evaluation, throughout the entire school year. Since students continue to grow and develop all school year, interventions that fit best in the first week often are much less effective later in the year. Less successful teachers in the study had intervention timelines that terminated more quickly in the ongoing maintenance stage, even though targeted problem areas had not been significantly ameliorated.

Initial, exploratory interventions in the study tended to be low-intensity and informal through all grade-levels. A statement by one of the kindergarten teacher summarizes the initial

approach by most teachers in the study, “We put in different things that we've tried over the years with other kids. You know we try to pull from that bag of tricks and implement things right away.” In eighth grade, reducing the student’s workload was the initial attempt, followed immediately by chunking of assignments into incremental pieces:

It started out very much with just a lot of test runs. “Let's see if in the next 10 minutes we can try to these three things. I know there's 10 things here, let's forget about those 10 things. Let's look at these three things and see what we can manage.” And just lots of breaking up, lots of chunking to test and see what would work with some successes some days, and other days less successful, oftentimes depending on the challenging level of homework. – Lila

Lila found chunking assignments to be valuable, but within a few weeks adapted it to include movement breaks, which were also quickly modified:

That's where it kind of evolved... because I was seeing it wasn't necessarily working with just “Hey, let's see if we can get some get this done before class is over today.” That wasn't necessarily consistent in success. So then it moved to, “Alright, so let's do two problems and then I'm going to send you to go take a walk and have a break.” And then, “So, two minutes out, and then let's come back and we'll do two more and then let's take another two minute break.” And just trying to chunk things with movement time in between which has success aside from behavior issues in the hallway. So that had to then get nixed and changed and altered just because he was banging on teachers doors and ... I couldn't keep my room in check while keeping him in check in the hallway.

Lila's ongoing evaluation led her to a deeper understanding of the student's needs and further adaptations, "By about December, what I picked up on, [by] just kind of looking at all these things, I had discovered a lot of times [the issues] had to do with what had happened in previous hours." Lila continued to communicate with his mother about missing work and the adaptive support being provided, but the student continued to struggle in the targeted area. While the student has no intervention plan of any kind, nor any recorded learning disability support, Lila discovered from the mother that the student had been pulled out of the regular classroom in elementary school for a reading intervention:

And about December, after just constant floods of emails home to his mom of either "He's missing this.", "He's missing that.", you know? "We need him to stay after...", "We need this from him.", his mom asked for a 504 evaluation.

While Lila had been increasing the individualization of the intervention set during the first semester, including more redirection and checks for understanding through increased one-on-one attention, the request by the parent for a Section 504 evaluation meant a temporary halt to any pre-evaluation intervention attempts. By March, the plan had been established, approved, and implemented:

Ultimately...we had to take [interventions] away 100% to prove that he could not stand without them and then we were able to re-implement those things back again. 504 interventions included: chunking assignments, breaks when needed (you know within reason), preferential seating, and consistent redirects.

In kindergarten, teachers found ways to include positive behavior interventions in the first few weeks in order to develop appropriate social behaviors and introductory academic skills.

A typical intervention at this level was simple and provided frequent immediate and positive feedback:

We decided to come up with a plan for him in which every time I just caught him on task, I dropped a little bug into his box, just a little plastic bug. And then at the end we counted up his bugs. Parents made [the number of bugs] equivalent to quarters and they paid him at the end of the week. And after soccer practice on Saturday he got to go and buy a slushy with his money. –Jamie

Interventions begun at this level required frequent adaptations to hold the interest of the young students, whose engagement faded as the novelty of the intervention wore off:

You're constantly reinforcing their positive behavior. There's things that... I've put in place with him to positively reinforce the behavior I want to see. [A kindergartener's] attention span with most any type of reward, or any type of behavior plan, last two or three weeks...The shine is gone and then you move on to something else. –Carol

Annette's initial intervention actions for her kindergartener reflected this pattern as well:

My first move was to put his seat sort of like at the end of a row so that there was not as many people around him that he could bother. And like when we are sitting up at that [rug at front of room], to have him be more like on the outside of the back, or the side, so there aren't as many people around him to distract him or bother him...It helped not distract as many kids...[but] he's still doing all the same stuff.

A few days later, in the second week of school, she started teaching positive replacement behaviors and introduced fidget objects for the student to manipulate:

He usually doesn't even have them for a day or it's like [thrown] across the room or he's throwing it up in the air or something like that. So the next day I'll say "OK, let's try it again", you know and try some kind of a fidget. And I've explained to him that, "Let's try to do this instead of these other things".

Nonetheless, classmates continued complaining that the student was bothering them, so Annette said she started "going by where he's sitting more often when I'm teaching to keep him on task, I still do that." Annette's intervention timeline over the school year with this student provides great examples of the persistent, iterative adaptations needed for optimal individualization. Her guiding perspective was to proactively provide supports that would increase the student's ability to interact appropriately in all learning activities, especially including his social interactions with other students. "I need to do something so that he can be in the classroom and be around the kids and not always be redirected and reminded." The timeline exhibited in Appendix A displays the timing, by week, of key milestones executed by each teacher in this study.

Three weeks after introducing fidgets, Annette added a personal desk for the student to have his own space away from the rest of the class. Like other kindergarten rooms in the district, this room utilizes flexible seating and various learning activity centers throughout the room. The individual seat, used alternatingly with flexible seating through the day, provided personal space and was targeted at reducing distractions for him and his classmates without actually isolating him negatively. "But then like when we were doing group work or were having snack or something like that, then there's a place for him to go and sit and work with everybody else." By the start of second quarter, with these positive classroom behavior interventions in place, she added more academic interventions to target his lack of confidence and persistence on tasks:

I would say by November I was trying to give him less quantity of whatever it is that we were doing. Because if he would look at something that looked like it was going to take a long time, then he would just give up before he even started...That made him feel better because he felt like he could do it.

At this same time she also arranged for the student to be at the front of the line each time the class took a restroom break. He would then go immediately to a neighboring classroom after his quick break while his classmates finished in the restroom. This utilization of other staff members was common among only the most collaborative teachers in the study. In this case, collaborative integration of another staff member helped keep the student in a more structured environment during an unstructured time and, incidentally connected him positively to another teacher. "That way he can kind of, you know, watch what they're doing in there and he's not having to do something he can't do, which is sit in the line." By the end of the month she had made a plan which gave him more short breaks during the day, targeted at his hyperactivity. She also continued to target his confidence and need for positive interactions by assigning him to lead his group every day to the afterschool program, elsewhere in the building. "That was his job. That's his responsibility. So he felt pretty good about that, because I wanted to give him ways he can be successful." Annette's ongoing work continued to increase the individualization of interventions for this student, including being positive and proactive to support his social emotional needs. "We look at it as there's a skill that they're missing. It's our job to try to do what we can to help them learn that [missing] skill and not [make it a] punishment thing."

By December, Annette's student was also being brought up by other teachers in "specials" classes, like physical education, music, computer, etc. They were sending him occasionally to their "buddy room", which is a nearby supervised classroom, pre-arranged to

send students who are having issues appropriately participating in their own classroom and need a safe place to take a short break, or a “time-out” to reflect and reconcile. She points out that:

After winter break it took him a while to get back into the swing of things and to remember what the expectations were. But after a couple of weeks, he kind of got back into it to get to the point where he was before that.

A mid-year dip in expected behaviors and responses to intervention was common for most students in the study, but persistence in adapting interventions was much less common in the second half of the year. Annette continued to seek adaptations to her established set of interventions to better meet her student’s needs. By February she had altered his restroom break plan to keep him closer to the classroom and away from unstructured gatherings of other students to keep him out of troublesome interactions. Then in March, engaged the principal over her concern that he still needed more help:

I tried to address him individually more with his work to keep him going on it and not get distracted. And then in March he started getting upset... like crying and stuff and he wouldn't tell me why he was upset. And so finally I got him to tell me what it was that was upsetting him. He was like “I can't do it. I just can't do it”. And I'm like “What do you mean you can't do it?” He said, “I can't sit still. I can't get my work [done].”, you know and he was very upset with himself because he couldn't get himself to do the things that everybody else in the class was doing and that he was expected to do. At that point then I'm like “OK, we need a bigger plan because I can't have him feeling like this.”

The plan that Annette, principal, and support team implemented in March addressed several targeted needs, but most especially his declining social-emotional status. The plan

included early morning daily talks to touch base and discuss expectations. Next, anytime the class leaves the classroom, like in the morning when they go to recess, the student goes before everybody else and walks by himself and he meets the class by the recess exit door, waiting in a chair placed there. This kept him from the needing to stand in line for extensive periods of time, which no longer seemed possible, and targeted his need to for structured movement. “He just goes and sits there and waits for us and then we come and we catch up with him and he just gets in the line and goes right out the door.” They structured a similar routine for transitioning back into the building, but this time he goes to the office and “he does some kind of a contribution there. Helps with shredding or something like that.” This is more evidence of the teacher’s collaborative approach. This increases the student’s connectedness to the school and school staff and gives him purposeful interactions, which targets his need to feel a sense of belonging and success.

“He eats lunch with the rest of the kids, even though he might be acting up in line. That’s not acceptable for other kids, but we kind of let it go for him because I don’t think, I mean, I just don’t think he can control it.”

In the afternoon they structured several short breaks into his schedule to keep him moving, “So he’s not sitting for too long of a time. And I’m still always going by him a lot.” By late afternoon they utilize more involvement of other school community members, in this case, an older student who works with him in an area of academic strength:

He’s really good at math... So, I have some kind of higher level math things that he does out in the pod with this fifth grader ... and you get the personal attention and he’s not trying to stay in the room where it’s really hard for him to be successful but he’s still learning math stuff.

By April, Annette added the use of fidget objects to the list of other interventions, saying, “He's gotten better with it, but still not where I would like him to be. But I wanted to help him. But right now it's not being as effective as I would like it to be.” In this study, persistent evaluation and adaptation differentiates the most exhaustively individualized process timelines, like Annette’s, from the least exhaustive. Unlike many others in the study, Annette’s intervention work never plateaued in the maintenance phase. While one or two interventions settled into a maintenance phase, there was also always action by the teacher in adjusting or adding interventions intended to increase the individualized fit to the student’s shifting needs for the entire school year. The process was fraught with failures, a characteristic revealed by all participants in the study, but each fall informed the next iteration, which Annette employed nimbly. Her persistent and sometimes dogged approach centered on only a few targeted behaviors at a time, prioritized student well-being over any other specific academic need, and remained proactive in the face of ongoing difficulty.

I've racked my brain, you know, for different [interventions that would help] and I feel good about this last plan that he's on because he doesn't feel bad about himself anymore, and the kids aren't always going “stop bothering me” anymore... So, if your philosophy is “I'm just going to punish them until they behave.” It's never going to work. — Annette

Annette’s intervention work for her student, like the work of other successful teachers in the study, was developed within a hospitable classroom environment. She established a strong relationship with the student with consistent expectations and a flexible approach to new issues. The structure of elementary school is advantageous to establishing an accommodating environment for students struggling with ADHD-related issues since they serve only about 20 students each school year, compared to the approximately 150 students served by a typical

middle school teacher in this district. Increased time with the student allows elementary teachers greater opportunity to develop a deeper understanding of student needs, more time to adapt to those needs, and a more consistent experience for the student over the course of a school year. After years of serving struggling middle school students, Katelin championed the elementary structure for its fit in serving students experiencing ADHD-related issues:

I know there's so many really great things that happen in elementary school, I feel like.

And then you've got this abyss of the middle school. Where, you know, you go from the safety of kind of home room, nice lighting, flexible seating, to changing classes [in middle school]. Every teacher might have different expectations. Things are located differently in the room. You're sitting in hard chairs most of the day, you don't get recess anymore. - Katelin

The hospitable classroom cultures developed by both elementary and middle school teachers in this study exemplified an intentional balance between structure and flexibility. High levels of structure provided unmistakable directive leadership from the teacher, which furnished predictability and consistent expectations, a quality most especially crucial for students exhibiting hyperactivity and impulsivity issues. Laura's comment about maintaining structure with her student best summarizes the sentiments expressed by other successful teachers in the study:

He cannot have just a mild mannered mouse [as a teacher], he needs to have somebody who's going to push back and tell him to "Step off". He really needs his boundaries set. "This is acceptable. This is not acceptable." If you even give him that little inch, he's going to go over the edge and it's going to be your fault because you're not providing that for him. – Laura

When teachers in the study established consistent classroom structure, they seemed to create space for more loose practices within that environment. Those finding the most success had leveraged the space created by intentional structure to flexibly personalize interventions. Christine encapsulated the outlook of all successful teachers in the study about individualizing through flexible and intentional differentiation:

The one thing that has really changed for me is being more proactive. So like, having more of the, not just flexible seating, but just all those tactile things and being flexible... I think you have to go into it as the personalized learning concept. If you have that frame of mind then you know that they're all at different levels. – Christine

Purposefully loose practices within a highly structured environment characterized the persistent individualization of interventions by the most successful in this study.

Collaborative, Consultative Problem-Solving Approach

One of the themes that emerged in the findings from this study supports prior research demonstrating that ADHD intervention must be individualized through an ongoing consultative, collaborative, problem-solving process that monitors using assessment data (George J DuPaul & Stoner, 2014, p. 143). Teachers in this study commonly valued the support of their school community, and especially the building problem-solving team:

We're lucky we have our Star Team... that's our building problem solving team. Includes principal, counselors, school psych, and any other staff specific to the student problem we put on the agenda. And also, we meet every Wednesday as a grade level and during that time I can say "Here's what I've tried, here's what I'm doing," and my grade level will help. Like, [the teacher] next door, she said "I have this carpet. Use this. See if that will

give him a defined space that he has to come sit on.” We help each other with those kinds of items. – Kindergarten Teacher

Effectively individualizing interventions in this study required extensive technical knowledge, a deep understanding of the student, and persistence in the face of challenges and failure. Lila believes teams help mitigate the disadvantages of middle school, where teachers do not get extensive time with students each day:

We do everything as a team. It's because we need to see the full picture. Since I'm not an elementary teacher I don't get to see the full picture and sometimes it paints a much more clear picture when you see the difference between classrooms. A lot of times it comes down to content, and sometimes it comes down to teaching styles. But it gives us so much more of a full picture... That's why...it's so vital as a middle school teacher. – Lila

Lila’s comments give complement the research that says the context of intervention is possibly more important than the type, as well as the importance of a collaborative approach. The capacity of a collective team to efficiently account for student needs and hit upon prospective solutions was a commonly expressed value in this study, from eighth grade teachers down to kindergarten. Christine appreciates the team approach in helping her second grade student, “He has the support of the reading specialist. I mean, we're all on board with what he needs. I mean that's where the community pulls in.” Julie expressed similar appreciation, “We're really lucky that we have some [para-educators] that are able to take a couple of minutes and take kids that just need a moment. I don't know how we would do it without them.” Angela, an elementary special education teacher with nearly 40 years in education, described her experience collaborating with teachers and helping kids with inattention, hyperactivity, and impulsivity.

Her comments on a willing disposition particularly matched those teachers in this study displaying the most persistent attempts at individualization:

You know usually [the regular education teachers I've worked with over the years are] willing to try other things and they're willing to go find more information so they can try something else. I see that more than anything. That's what we have a team for. If they've got questions and they're frustrated with a kid, or they think a kid is really having trouble, then bring them up and we'll brainstorm together and come up with some ways that we can try to deal with that. – Angela

This perspective on team collaboration for more and better interventions echoes the response of most participants as well, but especially the teachers most persistent in individualizing:

I just think that we have to listen to each other as educators and continue to learn and try different things. I mean I would take any suggestions anybody could give me for that little one... because I mean, “Have I done OK with him?” Yeah. And I love him dearly, but I could be doing more. –Stephanie

A fundamental barrier to ongoing diligence in helping students struggling with inattention, hyperactivity, or impulsivity is the inevitable frustration that accompanies the intermittent failures and enduring challenges. All teachers revealed frustrations to some extent and Christine shared an lasting desire for all teachers to avail themselves of the opportunities school communities provide:

I think that we sometimes do ourselves a disservice by putting these little [isolated] classrooms [together] ...The community has to be there. I think that's huge. And I see ... some teachers that struggle with behaviors and stuff and I'm thinking, “Gosh, if you had a community...” and I keep thinking about this. Like if there's a group of teachers working

with this [large group of] students and you're all helping on this, you're not going to feel as frustrated. – Christine

This study finds those exhibiting the most adaptive intervention sets tended to view collaborative school communities primarily as an indispensable resource for increasing the personalized assistance to the struggling student, rather than serving them directly or personally. They used language indicating that the collaborative teams helped them know how to help the student best, without expressing self-concern or individual relief from frustration. This service mindset presented itself persistently in the narratives of participants:

It helped so much. I mean to be able to go to other people in the building and say “OK, this is the problem. Help me out here. Give me some ideas.” That is so important because ... if you feel isolated in your classroom then you don't know what to do. – Kindergarten Teacher

It's the community ...If it's just one teacher trying to handle these behaviors and having... that team like every once in a while give their input. But that's not what's going on. It's like every day, you know, the counselor or the resource teacher, myself. I mean it's a community. – 2nd Grade Teacher

It's very helpful because everybody has different suggestions. You know, they said “Have you tried this? Have you tried that?”... Just simple things... I mean, I just don't know if I would have come up with all of [these interventions] all on my own. – 2nd Grade Teacher

Whereas a consultative, collaborative approach was widely embraced in theory and in reported practice by teachers in the study, effective inclusion of parents was the most difficult aspect they communicated about the team process. Inclusion in the earliest stages of the intervention process was very common for teachers in the study. Typically teachers called

parents to report the behaviors recently observed, to discuss the tentative plan to intervene, and seek input:

So, I started with just a phone call to parents to say this is something I'm going to try.

Parents really were seeing struggles at home and so they really wanted to come up with a plan that would work in the classroom and at home. - Jamie KG

Parents must rely heavily on the teacher's reporting of behaviors to understand their child's experience at school. Parental defensiveness to some extent was common among the respondents, even with the most successful teachers in the study. For instance, Carol contacted the parents of her student after the first two weeks of school to communicate the struggles with the positive behavior supports she was attempting. She had found each idea attempted helped only for two or three days, then became ineffective and was confident that getting the parents included in the process early would be advantageous. "No good seemed to come from the conversation." In spite of her service mindset and empathetic disposition, Carol found the mother of the student to be quite defensive as she, "wanted to place blame on anybody but [the student]... you know, the blame was everywhere else." When asked what was communicated to parents in this early stage, Carol expressed a similar overview common to others in the study:

We said "Well you've got to realize ... there's 20 new kids. Here's what we're seeing.

Here's very specific examples of things that we see... Here's the documentation of what we're seeing. Here's the things we've put into place. Here's the things that seem to work.

Here's the things that are not working." Parents said they don't see it.

Of particular significance is Carol's use of the collective "we", instead of the individual "I", when relaying her update to parents. Her word choice further demonstrates a fundamental collaborative approach. When asked if parent denial or defensiveness like this makes future

contact about similar issues less likely, Carol quickly agrees. “Absolutely.” Effective integration of parents into the problem-solving process was a common source of frustration in teachers in the study.

After extensive communication with parents in the problem solving process, Patricia pulled back mid-way through the school year out of exasperation. “I laid off of emailing them all the time, just because I was like 'What's the point?'”. Then, her school team advised she work to rebuild that bridge, showing their valuation of inclusion of even difficult parents. The message they relayed to her was, “We need to have contact with his parents because we're trying to partner with them. We're not going to get any solutions if we're not in contact.” Successful teachers in the study firmly expressed parallel responses on the importance of parental involvement in the problem solving process. Stephanie, who teaches second grade, represented the teachers in the study most simply, “The last thing I want to do is, I sure don't want to upset the parents because I need them on my side.” While parents have relatively equal standing in the collaborative team, they have ultimate veto power for interventions, before or after a diagnosis. In Lila’s estimation, parental resistance can withstand years of contrary feedback, preventing the crucial establishment of an effective, formal intervention plan before the child reaches middle school:

I get frustrated with the parents because how do you allow your child to keep doing this without intervening in some way, getting them checked out, getting them checked on, finding out if there's something deeper or more to this? And so it's frustrating and it surprises me every single year.

The reasons behind parent resistance are often personal and difficult to ascertain, but when asked to speculate on their particular situation, teachers in the study answered similarly to Christine, “I

think it's just hard for a parent to hear, you know. Like 'My child may need extra help.' And I think their big thing was they didn't want him to be different than the other kids." Participants often found that parents were not particularly forthcoming in their reasons for refusing to accept feedback or findings about their child. When Stephanie communicated with parents about the hyperactivity issues their student was experiencing and the initial attempts to help him, the mother preemptively defended, saying, "I just want to let you to know, we won't ever try medicine. That's just not going to happen." Stephanie reflected, "I kind of felt like she wanted to let me know 'I'm the mom and this is the way it is and we'll *kind of* listen to you, but...".

In spite of unsteady parental support, school community support seemed to be sufficient for veteran teachers like Stephanie, Christine, Carol, Annette, and Laura to proceed with some level of success in effectively individualizing interventions. Their experience and technical knowledge about ADHD was advantageous in navigating the challenging intervention process and these veterans exhibited confidence even when coping with intervention failures and parental resistance. Christine described a perspective common among the veteran teachers, where focus on the process was valued over strict outcomes:

I think it's a learning process... I feel like sometimes as teachers we honor more of that first time, 'I got it!', more than it being a learning process and it needs to be a learning process... including behavior and interactions and even as adults we're still learning. -
Christine

Experience combined with an amenability with the rest of the school community seemed to have a mitigating effect on the ability to cope with associated stress that accompanies ongoing student challenges. These veterans tended to express the stress involved in serving students with ADHD-related challenges as natural to the process of learning for themselves and their students:

It's exhausting. I go home every day and I'm like, I'm ready go to bed by 8:00 o'clock.

It's exhausting. There's days when I have no patience for my own child at home because

I have given all that in school. But, would I trade those kids for the world? No. Because

I think they teach the other kids so much. - Carol

The practices of these veterans included taking suggestions and soliciting advice from those less experienced with ADHD-related issues, including parents. These examples are counter to the tendency, described earlier from Kos's work, of experienced teachers to be overly optimistic about their knowledge about ADHD, making them unlikely to ask other professionals for more information about the disorder (2004, pp. 518-519, 525). While the scope of this research does not provide wide evidence against Kos's generalization, these results do indicate that these successful veterans are exceptional to some extent. This study found persistence endured, in ongoing individualization of treatment for those experience ADHD-related issues, when teachers deeply engaged the school community, including parents, for assistance and utilized its collective wisdom. Successful facilitation of parental inclusion in the intervention process in this study was marked by teacher initiative and ongoing proactive communication, epitomized by participants like Stephanie and Laura:

I let [the parents] know, I'm like, "Even though I'm a veteran teacher, tell me what I can do to help your son." ... Because I always feel like... as a parent, you know your child best. "Please let me know if you have something that works better and I'll try it." -

Stephanie

I really stressed this upfront, is that we are a team and you know what? You're going to do things that I don't agree with and I'm definitely going to do things that you're not

going to agree with. But we are still on the same team because he's going to succeed and that's what I want for him. – Laura

Proactive parent communication was evident throughout the year for these teachers, but not a guarantee that parent collaboration would be notably effective. Struggles remained among veteran and more novice respondents alike. Laura reflected on the wavering support of the mother of her student:

So this year has been kind of a rollercoaster with her. But I think finally she's on my side. She sees that we're doing the right things for him... I probably say I was ... either emailing or talking with mom every week ... 'til December. I think we did a lot of chatting on the phone in the month of December. December was a hard month.

Annette found joint efforts with the parents waived due to divergent opinions on the appropriate upper limit of interventions for their student:

They still think he's gonna get it. He's going to get it. He's going to get it. And I think he needs some other kind of intervention because I just can't stand to see these kids get so upset with themselves, you know. And if it was my kid, I would be like "What can I do to help my kid feel more successful? ...What do I need to do? Where do I need to take him?...Instead of like denying there's a problem, but everybody reacts to it a little bit different.

Parents hold ultimate veto power in deciding to evaluate, as well as in the chosen intensity levels of interventions. Parents also have the final choice in whether or not to move forward with evaluation, including medical evaluation by a pediatrician. In this way, parents play a large role in the timing of interventions as well as in the timing of a potential diagnosis. Teachers pushing for more intense interventions without the support of parents and the problem-solving team end

up in a stalemate where teachers discontinue adaptations and interventions go into a maintenance phase for the remainder of the year. While Annette's stalemate did not preclude her adaptive persistence in educational interventions through the school year, disunity with parents or the problem-solving team was a relevant factor in ongoing treatment. Julie's and Angela's intervention timelines each settled into a maintenance phase mid-year with little evidence of student success in the targeted area. Julie, whom had expressed frustration about lack of team validation of alleged need to evaluate, expands on the idea that resistance to evaluation leads to unreasonable plateauing of interventions:

You feel like you're setting kids up to fail for two years and you feel like your professionalism isn't being valued just because... the same things that teachers said about those same kids are exactly the same things are coming up in second grade.

In Angela's case, parental resistance presented itself more as detachment:

We did [bring up the impulsivity issues] for fall (October) parent conferences. We did. We absolutely did. And parents just kind of went "Oh yeah, our dad's kind of that way." You know, and "Da, da, da, da, dah," and didn't really grasp what we were trying to say. So, we brought it up again at spring (February) conferences and said "You know, really, this is really making a big impact on her." So we talk to the parents about that particular one (impulsive blurting and unreadable writing) at conferences (February) and just said "What have you noticed?" and "Here's what we're seeing and we think it's really affecting her because she can't stay focused and she can't stay on task. And it makes her work products ... below what we'd like to see them being."

But unlike Annette's continued pursuit to personalize the fit of the intervention set, Angela's intervention set settled into the maintenance phase:

When we did her IEP then, I did put in there that she struggles to pay attention. I mean, I put that stuff in there and on, you know, in her present levels of performance because that's the way it is... So, you know, when she starts writing really sloppy or she's unable to stay focused or she's blurting out, those reminders really do, they have really helped I think. But I think it's not quite enough. I really do. She's still doing it and it's still, you know, she still stands out like a sore thumb to the other kids... I did not set up a specific like positive behavior intervention and support plan. She does not have a PBIS. It's just that her teacher and I are on the same, we're really on the same wavelength. So, we're pretty consistent about what we do with her to remind her.

This distinction between maintenance and persistence in reworking interventions had the most significant correlation with successful amelioration found in this study. Angela did, however, persist in communicating the ongoing struggles with parents, which led to medical referral. “So the mom did make an appointment and they went in and we haven't really heard back what's going on, but we did fill out some forms.”

Other teachers, like Annette and Laura, persistently included parents in the solution modification process, rather than just communicating struggles. These type of efforts were more likely to re-establish positive collaborative interactions with parents after struggles. After months of semi-resistance from parents, Laura explains how her persistent collaborative approach led to a turning point in the relationship with the parents of her student:

And when we came back [from winter break], we had our Spring Conferences the first week of February and she was one who did not request [a conference with me]. And I said “Hey, my feelings are hurt. Do you not want to ... come in and find out everything he's doing?” and she's like, “Well, no I'm, I'm OK. Are you OK?” And I'm like, “I'm OK.

He's OK!" So she's like, "No I'm good!" ...I think now coming towards the end of the year she trusts me.

In summation, this study found that a collaborative approach was valued by all teachers in the study, but the most successful viewed it as imperative in developing a deeper understanding of the student and in effectively utilizing other people to directly personalize interventions to support the student's needs. This study finds that a service mindset and a substantial technical knowledge of ADHD used in conjunction with a consultative, collaborative approach was closely associated with the most adaptive individualization of interventions that persisted the entire school year.

Disposition Toward Student Behaviors and Control

One final theme emerged in the findings from this study that supports prior research demonstrating that teachers' knowledge and attitudes about ADHD are likely to influence appropriate and timely assistance and their willingness to implement interventions. The findings of this study indicate that those teachers most persistently involved in an iterative process of evaluating, adapting, abandoning, and implementing new interventions throughout the entire school year, were also likely to hold firm beliefs that the student in question almost always lacks agency in relation to ADHD related behaviors due to physiological factors beyond the student's control. These teachers seem to accept ADHD-related challenges as an integral part of their professional duty and consistently seek to take ownership in controlling contributing contextual factors as evidenced through reported actions, discussions, and interview answers. While avoiding a position of blaming the student for ADHD issues, the most successful teachers simultaneously held firm and consistent expectations for the student.

Teachers in this study tended to describe positive student attributes before challenges when asked to communicate first impressions of the student in question. Carol, in particular, chose her words very carefully when describing first impressions. When her apparent caution in speaking is noticed and questioned by the researcher, she alludes to her underlying determination to be kind, non-judgmental, and to avoid being “rude”. While social norms and politeness are likely driving factors for all respondents, the tendency to lead with constructive information is helpful in understanding the dispositions of these teachers:

He was a very rewarding [student to teach] in the sense that he was a very bright student and he was very aware of others. He was extremely complimentary. And so even when he would get sidetracked and take the class off [track], and we had to kind of reel him back in, he was still always so kind to his friends and complimentary of whatever they had to add to the story or the conversation. – Jamie Kindergarten

Very bright. He's a darling little boy, very well liked by his peers and very sweet, but just cannot stay focused. – Stephanie 2nd Grade

He's a bright intelligent articulate personality plus, personality plus! – Laura

Extremely charismatic and extremely relatable, particularly with adults. - Lila

Very few teachers led with negative impressions, in spite of the commonality of initial challenges. Patricia’s description of first day as a nightmare was the exception and she went on to explain her first impressions:

I mean a rough start. And of course I was in tears... If you wrong him in any way, or feels like he's being wronged, he will stop talking to you. Ignore you. Won't move. And it's usually at the most inconvenient times when I'm trying to get the rest of my class to specials or to lunch. It was a total power struggle.

Patricia's early struggles as a first year teacher help to outline the difficulty for any teacher in maintaining a constructive disposition about the student and related challenges while working through the process of successful intervention. Julie, who had described frustrations about being overridden in her push for more intense interventions by her support team, was also a first year teacher facing ADHD-related student issues. These two first year teachers were less persistent in personalizing interventions and articulated more explicit stress than other, more experienced teachers. Julie summarized her feelings, saying that working with the student "was a stressor for me, especially because it was my first year teaching. ... But I never I never felt like it was something that I wasn't responsible for. And I don't think many teachers would feel that way."

The sense of responsibility Julie alluded to was a common feeling among respondents, and even the least persistent shared a convincing sense of duty. Representative insights included:

So we have to do the best for them that we can within those parameters, and we do, you know. Even though we know that sometimes they can't help it. – Angela

If you're going to do this, you need to do it right. And you're not going to help these children by being impatient with them and if you're going to be here, you might as well figure yourself out and do it. So it took a lot of personal growth for me to be able to acknowledge that need first and then act on it and start improving myself from there. -

Lila

Laura, who was especially adept at flexibly adapting interventions, summed up her overarching drive, "Our kids have got to be the priority. You've got to do what's right, and I love kids." This study finds that teachers like Laura, with the most persistent individualized

interventions, tended to prioritize student needs in spite of lack of support or personal frustrations. Their language conveyed empathy and responsiveness. Laura epitomizes the disposition found in these most successful teachers in this study and here she describes her outlook on the student:

You've got to feel empathy for him. He's crawling out of his own body. You get a feel for him. He doesn't [have real control] ...Obviously the wires are just loose and going off and he's got to learn to control it. And some kids are really great at it and some kids are not. And over time he's going to get better with it.

Laura's empathetic interpretation of the student experience of ongoing hyperactivity and impulsivity was similar to the views of other persistent individualizers in the study. Specifically, these teachers viewed the student's challenging behaviors, not as undisciplined self-indulgence, but as a physiological consequence that must be counteracted through intentional skill building, which takes time and practice. Annette's interpretation was illustrative of this empathetic view, "It just breaks your heart because I think that he can't really control it. So why am I going to make him feel horrible about himself?"

Patricia did believe lack of experience played a part in the challenging experience with her student. "Last year, the student seemed to have a better experience and had a good relationship with the teacher, but she's just had more experience than I have." Patricia's speculation is in line with Anderson's work stated earlier which found that as teachers gain experience, their knowledge increases alongside more favorable behaviors toward teaching students with ADHD (2012). Patricia's lack of intervention success also lends evidence to the prediction made earlier that inexperience and lack of knowledge would inhibit effective understanding of standard intervention strategies and proactive management of environmental

factors, rendering tailored intervention unattainable. While Patricia recently graduated from an accredited education program, she felt her positive disposition immediately challenged due to lack of practical experience. Lila, who has more years of experience, spoke of this challenge directly:

In college you get this big picture, “Oh, there is going to be these interventions. The system has these things built in. There's all these strategies. They just work. “Here you go, here it is in this nice little booklet on this silver platter, you'll be great, you'll be awesome.” And then you walk in and these kids are human and you're human and everything gets lost in between there.

As a result of the tangible stress involved in initiating solutions for her student, Patricia's disposition quickly slipped into a more negative mode, which also supports Anderson's work on teacher dispositions (2012, p. 523). The intended proactive, transformational approach fell away alongside the positive teacher affect and was replaced by a reactionary, transactional perspective. “I feel like for the first couple of months it's just centered around him. What is he going to do? How is he going to react? How is he going to take this?” While Patricia's intended path was based on an initial service-oriented disposition, she succinctly describes the ultimate problem in successful execution of persistent individualization of interventions, “He just used up all my energy.”

Martha found that lack of knowledge was related to insecurity with some of the regular education teachers she has supported over the years:

I think that sometimes it's uncomfortable because they don't know how to help the student. It's not out of a place of, “They wouldn't”, it's just that they kind of feel insecure about it. They don't know how. And that's the most important part for support teachers

like a special education teacher, is to get into the classroom and coach them and teach them how. I think they would be more comfortable with that.

In frustrated or insecure states, teachers have a difficult time maintaining a proactive approach and the interactions can become more negative. All teachers in the study expressed challenges in maintaining a positive, proactive approach when facing the challenges specific to ADHD-linked behaviors. This included veterans like Stephanie, whom experienced negative feelings toward behaviors that even she believed were not in direct control of the student. “I mean sometimes I get really mad at myself because I kind of get frustrated with him because he's making so many noises and so many disruptions and ... for the most part he can't help it.”

Stephanie’s disposition that behaviors were, to a large extent, not within direct control of the student was shared by most in the study:

Those kids kind of have a place in my heart because I'm always like “Awww” you know. I wouldn't say it's frustrating to me and I don't know what reason, but it's kind of like I understand. Like, you don't want to sit down. It's like me going to a meeting. I don't want to sit through a meeting. I get it. – Christine

Laura’s empathy was evident in her response, in spite of recurring challenges:

It's so cyclical [his behavior]... two weeks he's fabulous, and then the following week he is just in the toilet. He just tries so hard to keep it under control. And it's like we all know that... you need to have a break. That's how some people are.

Beyond empathy, acceptance of the challenges that accompany effective treatment of students with inattention, hyperactivity, or impulsivity was found in this study, but among only the most persistent interventionists in the study. Carol viewed these challenges as integral to her

teaching duties and this study finds this accepting disposition a hallmark of those with the most successful intervention processes:

I mean I guess for me that's what makes a room a room. You have the kids that are quiet and that are shy and that aren't going to speak. And you have the kids that are leapfrogging down the hall. And to me it helps all the kids in the middle and everybody build and learn compassion and patience and understanding and without that I don't know that we would appreciate all aspects of life.

Methods to uphold a positive disposition toward the student were described by many who were most accepting of the related challenges. These methods required persistence on the part of those who found success. Stephanie said, “I have to sometimes take a step back [and] breathe because, I mean, it's just constant.” Angela explains her method, similar to many others in the study, on upholding a positive disposition:

I always try to look for something positive that you like about that kid. Because sometimes they're frustrating and they're hard to like. So every single day, find something. Whether you like the color of the shirt they wore, you know, find something positive that you can try to connect with kids. Because then it will make it easier for you to deal with them too. I always tell the teachers, “Let's start with something positive, something we can encourage them to do, the behavior we want, before we do something punitive about the behavior we don't want.”

Similarly, Christine reminds herself that each child has unique strengths and that she should continue to seek to understand what that means, “Are we seeing the whole child? You know, those things could be missed. ...They all have different talents. ...They can all do different things.

It is kind of how you foster it.” Angela goes on to elaborate that a positive disposition must also be developed alongside ADHD knowledge:

[Teachers are] gonna have [kids with ADHD] in their class. They're going to have to deal with them and they need all the knowledge they can get in order to do that. ...You just can't walk in there, just flying by the seat of your pants. You really need to research it and get some more information on it.

While those with the most knowledge and experience with ADHD were able to maintain a purported positive, empathetic approach with their students, they also held consistent, firm, and high expectations. Annette, whose empathy was foundational to her ongoing persistence in individualizing interventions, described that consistent expectations and student accountability are especially important, on balance, with students suffering inattention, hyperactivity, or impulsivity issues, “For those kind of kids especially, unless they suffer a consequence, they're not going to learn it. If you rescue them, they won't change their behavior.” Carol expressed a similar style and elaborates on maintaining a balance point between empathy and expectation:

Even the hardest children need to feel like they are important and appreciated and loved. Because to me, those kids that truly have issues and that have things going on, they aren't doing it to be defiance and to be difficult. They're not doing it on purpose...Even though, like, I'm hard on my kids. I am the first to admit it. I'm very hard on my kids. I have very high expectations. I am not nice. I call them out. I'm not the one that's like “I need to talk to you in the hallway.” That's not my style. Right or wrong. But at the same time, I will get down with my kids and build that relationship with them that I *can* talk to them that way and they still have that relationship with me. And as a class unit, we respect each other.

Establishment and maintenance of a relatively strong relationship was a shared attribute of the most persistent individualizing teachers:

You've got to have a relationship. If you don't have that relationship you're not going to go anywhere...I worry about him, because next year he goes off to fifth grade and, depending on which teacher he gets, it's either going to be a really rough year or a really good year. – Laura

Laura's concern about the teacher her student would have next was due to her understanding of those specific teachers in her building. When asked about what attributes in a teacher are crucial in effectively serving students suffering these issues, Stephanie stated:

Patience and not afraid to try new things. You know, learn and do what's best for that little boy and ...all the little kids. But I do think he probably needs a teacher that has high energy.

Consistent, firm expectations was cited most often by respondents, exemplified by Maria:

I think he needs to have a teacher that has some structure...Someone who is patient and can ignore or tolerate a lot, you know, without becoming upset with all this stuff that goes with him and able to work through those social problems with the peers too. - Maria

Kaitelin said she hoped her student would have a “Teacher who is flexible and kind of in-tune with his needs because he doesn't do those things on purpose you know. So if they can be understanding.” Flexibility in expectations was also high on Lila's list of attributes and she explained her experience with it:

This is where the difference between equity and equality comes in. If I held him to the same standard and expectation in terms of consequences, the child would never attend my class because I would have to remove him from it.

In sharing dispositions toward the challenges of serving student with ADHD-related issues, some teachers also shared their disposition toward medical intervention. Annette reflected on her process of intervening, the challenges of getting parents committed to interventions, and the level of challenges that remain for her student:

If it was my kid I would be like "What can I do to help my kid feel more successful ...What do I need to do? Where do I need to take him?" Instead of like denying there's a problem.

Most teachers expressed some level of restraint in their support of medication and Angela's perspective was characteristic:

You absolutely cannot think that putting a kid on medication is going to be the cure all. ...You have to also address those behaviors and come up with some kind of behavioral plan that you're going to do with them to help ... change some of those habits. - Angela

Laura agreed, "In one sense I really believe, I've seen medication do fabulous things. I've also seen medication do crappy things. It takes away their personality." Misha gave her perspective, encouraging utilization of medication on balance with individualized behavior interventions for diagnosed students like hers, with severe symptoms:

So, the best option would be both medication and behavior therapy, but I think parents are too scared and they hear such negative things about [medication] and I don't think they hear the pluses. I don't think they are aware that, yes the behavior therapy is the best option. And of course try the food diet, try taking out sweets. Try that. Go ahead please do that. Just know that it's not a bad thing that if a child is getting medication to help them learn, it's not a negative thing. And I think that's what a lot of parents think...I don't think they have the big picture and I wish they did.

Conclusion

This study finds commonalities among teachers who persisted in evaluating, adapting, abandoning, and implementing new interventions throughout the entire school year in order to increase individualization. Teacher's self-reported process-oriented success and outcomes-oriented success were used to distinguish treatments and explore associations between persistent intervention timelines, collaborative approach, and dispositions toward challenges. Process-oriented successes were evidenced by iterative intervention adaptations, or additions, based on ongoing evaluations of data, which gradually improved the apparent fit to student needs. Outcomes-oriented successes were evidenced by descriptions of ameliorating effects in the targeted areas of student behavior and academic performance. Variations in these categories helped distinguish relative effectiveness of individual treatments for examination and discussion. Successes in both process and outcomes were associated with teachers who believed their student lacked the ability to effectively control ADHD-related behaviors, each accepting the associated challenges as integral to their professional duty. Consequently, these teachers consistently took an active role in controlling antecedent conditions while also facilitating student skill-building and contingency management plans. While the most successful expressed sincere empathy and avoided holding the student strictly accountable for ADHD-linked issues, they also held simultaneously firm and consistent expectations for the student.

Firm and consistent routines and expectations was always accompanied by ongoing evidence of adaptability and flexible thinking in teachers who exhausted of intervention options more extensively, leading to more individualization. This also equated with the ability to fail forward efficiently into a year-long rhythm of intervention iterations. Year-long persistence in ongoing evaluation and adaptation was correlated with high levels of collaboration and technical

knowledge about ADHD. The practical and collective application of collaborative team input, technical knowledge, a service and challenge oriented disposition, and consistently firm expectations was found in a select few who more efficiently improvised and adapted interventions. Their practical wisdom and persistence increased the relative development of personalized interventions and coincided with development of a positive, personal relationship with the student.

This study finds that the most successful intervention sets were not just delivered early, but were also persistently personalized throughout the entire school year through ongoing evaluation and adaptation. Consequently, the most successful teachers in the study were the most diligent in effectively exhausting educational interventions before leveling off their efforts. This effectively achieves a greater personalization of fit for the educational intervention set and decreases the likelihood of premature and unnecessary transition to more restrictive interventions, most especially including the introduction of medical interventions.

Chapter 5: Discussion

Introduction

The purpose of this study is examination of the timing of actions taken by teachers in response to student issues associated with ADHD in the pre-diagnosis or un-medicated period. Since its debut in the 1980 DSM of the American Psychiatric Association, ADHD diagnoses have increased immensely (Neufeld & Foy, 2006, p. 450) through utilization of observations and judgements by teachers and parents as central diagnostic considerations (Levy et al., 1997) without a material understanding of the causal factors (Graham, 2008, p. 12; Purdie et al., 2002, p. 62). While characteristic behaviors are most pronounced and problematic in school, the solution has been medicalized (Neufeld & Foy, 2006, p. 464) to the extent there is a growing concern about overdiagnosis and overextension of the medical model as the primary method of treatment (Purdie et al., 2002, p. 62; Scheffler et al., 2007, pp. 454-455). These factors prompt critical examination of student treatment in the natural school setting, especially during the critical incubation period of ADHD diagnosis where support for or against medical referral is decisively established. Pre-diagnosis examination of general education treatments and contexts is also positively encouraged by studies in this field which indicate that moderate to large improvements in academic and behavioral functioning of students with ADHD are associated with a variety of school-based interventions, which can affect academic functioning beyond simple symptom reduction (George J. DuPaul, 2012, p. 409). Accordingly, this study examined the timing, personalization, and context of school-based interventions initiated and sustained by teachers in service of students suffering ADHD-related issues, pre-diagnosis, in the regular classroom within a single school year. The study interviewed elementary and middle school teachers about recent challenges in *originating* effective solutions for students experiencing

genuine inattention, hyperactivity, or impulsivity issues in the regular education classroom within a large, high performing, middle-class, suburban school district. Using the analogous medical vernacular, this study examined the dosage and duration of school-based interventions prior to referral for more intensive interventions, like medication or special education services.

Findings of this study indicated that the most successful school-based intervention processes flexibly met the specific needs of students struggling with ADHD-related issues through persistent personalization of interventions. Specifically, teachers reporting the most targeted behavioral and academic student progress also reported the most persistent evaluation and adaptation of school-based interventions. While prompt identification of need and initiation of one or more interventions was common across study participants, diligence in adapting and exhausting effective school-based interventions before leveling off efforts, or referring for evaluation, distinguished participants. Participant understanding of ADHD and educational best practices were foundational in effective selection and personalization of interventions, but diligence in adaptive application of intervention protocols through an empathetic and collaborative approach was associated only with the most successful treatments in the study. These teachers regularly controlled contributing antecedent conditions while facilitating contingency management plans and skill-building activity in student executive functioning, while simultaneously finding specific ways to build student confidence, self-esteem, and social connection to the school community.

Discussion and Implications of Findings

Based on the findings presented in this study it is clear that the effective treatment progression for students experiencing inattention, hyperactivity, or impulsivity is iterative, persistent, and highly correlated with the teacher's collaborative, consultative approach to

problem-solving and an empathetic attitude about struggling students and their apparent lack in agency. Moreover, these successful teachers seemed to apply high levels of technical understanding of the student struggles associated with ADHD flexibly and, at times, spontaneously. These teachers utilized wisdom practically, as exhibited in efficient and adaptive application of interventions and treatment within a variable and often hectic classroom setting.

The most effective teachers seemed to embody the maximization of school-based interventions by continually reworking interventions to serve the changing needs of struggling students with ADHD-linked issues. Motivated by a self-reported sense of duty and empathy for the student, they leveraged knowledge and skill through adaptability and flexible thinking to explore options and fail forward more efficiently than their counterparts. Ultimately, this was correlated with intervention development that became increasingly personalized for the student, likely decreasing possible need for further intensive services and delaying the possibility of referral.

While successful teachers in the study displayed relatively more practical utilization of knowledge and understanding about ADHD and related issues, they distinguished themselves in action by continuing to seek meaningful interactions with students beyond the transactions of classroom lessons to build interpersonal connections and deeper understandings of personal need. The most successful in the study cast their nets wide, collecting ongoing formal and informal student data, in order build understanding of their students' needs from a whole-child perspective. Carol, one of the kindergarten teachers in the study reporting consistent intervention adaptations, describes this common need to understand the whole child most pithily, "You know there's so many factors you have to try and figure out." This was echoed by many in the study, like second grade teacher Stephanie, "I mean each year I have to learn my students and

try different things... I just think that we have to continue to learn and try and not be complacent.”

A noticeable and common correlation with these proactive and intentional interactions with struggling students was the intentional loose-tight leadership dynamics, analogous to those described in business literatures. Sagie’s work in the loose–tight theory of leadership suggests that highly directive practices of a leader and individual freedoms for the followers may often complement each other (2002, p. 304). The integration of the loose and tight practices among participants of this study was commonly described as important in mitigating student issues. Carol’s comment captures this common intentionally, stating, “I’m very flexible. My kids have a lot of movement, a lot of freedom, but at the same time I expect you to follow directions.” Loose-tight practices among successful teachers in this study were akin to those found in Sagie’s work and did not necessarily “yield a coherent, static leader’s style, but rather a dynamic one in which either [participatory decision-making] or directiveness becomes more prominent depending on transient situational factors” (2002, pp. 304-305). Sagie’s findings are particularly applicable to the work of teachers, who also “tend to be looser when... member commitment is considered essential for decision accomplishment, and tighter when they have sufficient information for making the decision...[or] when they expect a conflict among subordinates” (p. 305). This lends further credence to the idea that effective mitigation of ADHD-related student issues in the classroom is not so much prescriptive as it is adaptive application of best practices. This requires dynamic teacher engagement, which requires a great deal of energy and practical wisdom to be operational.

Since energy and practical wisdom are finite resources that are often hard-pressed when working with struggling students, they represent major limiting factors in effective treatment by

classroom teachers. Teachers who tended to collaboratively facilitate more student engagement in the greater school community also gained collective wisdom through collaboration and better safeguarded their individual energy resources to sustain resilience in treatment protocols. While the most successful teachers greatly valued the school community primarily for leveraging better interventions, rather than simply sharing the stressful load of serving challenging students, all appreciated the wide-ranging benefits. This often meant utilizing members of the school community to interact or work with the struggling student in various contexts and seemed to have a stress-relieving effect for both teacher and student.

By working to include school community supports into the weekly intervention schedule, effective teachers build in methodical breaks, which, like relief valves, help release potential physical and psychological pressure through proactive interaction and work with other building staff. While these breaks typically comprised a very small portion of the student's schedule, their timely placement simultaneously helped control contributing antecedent conditions while facilitating student skill-building and deeper social connections within the school community. Teachers facilitating these school community supports outside of regular classroom activity reported positive outcomes, including more learning and better engagement in learning processes, needed stress-relief for teacher and student, fulfillment of student need for physical movement, and greater connectedness of the student and teacher within the greater school community. This dynamic is particularly important as it highlights how a highly collaborative approach can be valuable in increasing the practical wisdom collectively applied to serving the student and in increasing the efficiency of energy output for supporting teachers, both of which likely help maintain persistence in adapting interventions to serve evolving student needs.

Research on intrinsic and prosocial motivation in persistence, performance, and productivity is also informative in exploring these findings. Adam Grant published a study in the *Journal of Applied Psychology* (2008) which sought to understand why employees go above and beyond the call of duty to persist in performing their work effectively and productively. Grant's study suggested prosocial motivation works in conjunction with intrinsic motivation as primary drivers for employee efforts. While efforts based on present levels of pleasure and enjoyment are characteristic of intrinsic motivation, prosocial motivation is characterized by efforts driven by the meaning, purpose, and self-realization associated with the future outcomes of serving others. For example, when a teacher is intrinsically motivated to help a struggling student, the enjoyment of the current process of teaching and intervening drives efforts. When prosocially motivated however, the desire to serve and positively influence the educational outcomes for the student drives efforts. Grant found that when accompanied by intrinsic motivation, prosocial motivation is more likely to predict persistence, performance, and productivity. In absence of intrinsic motivation however, prosocial motivation might be insufficient in enhancing persistence. Most concerning is Grant's conclusion that, "when intrinsic motivation is low, the experience of pushing oneself to complete the task in the absence of enjoyment leads to stress and overload. From this perspective, prosocial motivation without intrinsic motivation may deplete employees' psychological resources for self-regulation, leading to exhaustion and thereby decreased persistence and productivity" (2008, p. 54).

Grant's work is distinctly applicable to the findings of this study, since teachers tend to be overtly prosocially motivated, but were frequently pushed past their threshold of enjoyment. Looking at the work of teachers in mitigating ADHD-related student issues through Grant's lens, we find that enjoying the process and valuing the outcome can enable higher levels of

persistence, performance, and productivity. While teachers are likely to display higher levels of persistence, performance, and productivity when they experience prosocial and intrinsic motivations concurrently, enjoying the process is an erratic endeavor, fraught with unforeseen challenges and stress. When student needs approach an indisputable necessity for intensive intervention, associated challenges cause teacher diligence to reach a threshold of feasibility. As teachers reach this threshold, diminishing enjoyment and increased stress exhaust intrinsic motivations, but their inherent obligation and sense of duty require pushing to intervene in the absence of enjoyment, leading to overload and eventual burnout. In the less extreme, overloaded teachers are likely to focus residual energy primarily on minimizing troubling behaviors and neglect academic goals and interventions. While this sort of goal displacement is highly dependent on individual teacher capabilities and motivations, ADHD-related student needs deemed significant enough for intervention eventually exhausted the capabilities or motivations of all participant classroom teachers to some extent. The most successful reported this in temporary moments, while the less successful were more likely to describe this as a more chronic issue. Lila's description of this was powerfully representative of teachers experiencing their threshold:

When [these challenges] get to such a degree, there's nothing for us, there's nothing to help us, and we are on our own to figure it out. And I run a classroom of 30 to 34 students every hour and I'm supposed to be able to have one-on-one time with the student, to make [him] successful, but also teach my other children, it's hard. And sometimes our human side overtakes our professional side.

When teachers remain depleted beyond their threshold, the negative effects also manifest beyond learning issues in the classroom, creating long-term consequences that are difficult to understand.

Laura learned a bit about this negative dynamic for a student and his family after the recent transfer into her building from another, explaining:

The rationale I got for leaving the other building was, ‘After a while I felt’, and these are [the mother's] words verbatim, ‘I felt that all the teachers were against my child.’ I can see that he probably got a bad reputation. Nobody wanted to deal with them. So they kept pushing him away.

Drawing on Grant’s findings, supporting teacher work contexts that promote better prosocial and intrinsic motivations is essential in promoting persistence in adaptive intervention protocols for students suffering inattention, hyperactivity, or impulsivity issues. Grant suggests that giving employees opportunities to understand the positive impact they have on the well-being of other people, called task significance, likely enhances intrinsic motivation while simultaneously providing opportunities to benefit others, thereby also enhancing prosocial motivation (2008, p. 56). While clear excitement to serve others often marks the beginning of a teacher’s career or school year; over time, motivations deplete when teachers are disconnected from seeing the full impact of their work. The practical wisdom revealed by successful teachers in this study was most noticeably a matter of sustaining balance between two opposing motivations, expressed clearly in a quote cited in Grant’s work (2008) from writer, editor, and children’s book author , E.B. White, “I arise every morning torn between the desire to improve the world and the desire to enjoy it. This makes it hard to plan the day” (p. 56). Ultimately, enjoying the work of mitigating the struggles of those suffering from ADHD-linked issues requires school community support and should be sought quickly and explored extensively prior to any recommendation for evaluation.

Limitations of the Study

The present study is limited to the experiences of a small number of teachers in the Blue Valley Schools who experienced self-reported issues in originating solutions for students within a single school year. As a large, high-performing, suburban school district, the experiences of participants are generalizable as a relatively ideal public school model. Particularly, the contrasts found in informed persistence among individuals are helpful in generalizing optimization of treatment of student inattention, hyperactivity, or impulsivity when school district infrastructure effectively fosters ongoing collaboration and community supports. Since high performing school districts like this tend to be vanguards in providing student supports, and are more effective at leveraging and supporting learning, the challenges explored here enlighten a comparative threshold of effective pre-diagnostic treatment of ADHD in public school classrooms. However, limitations of study data do restrict their wide-spread applicability.

Specifically, the results of this study are subject to the retrospective reconstruction of participants' experiences and beliefs, which are fallible to some extent. Obtaining objective answers from participants, for instance, was impossible because the impact of their work with struggling students is emotive by nature. Furthermore, the research design did not limit participants from self-selecting into the study based on any preexistent biases. Detection of student issues and responses to inevitable stressors are especially subject to bias. Since hyperactivity and impulsivity are more overt and disruptive in classrooms and none of the study interviews revealed isolated inattention behaviors by any of the subject students, the findings here are applicable only to student issues that include some form of hyperactivity or impulsivity. While the purpose of this study was examination of practical detection and treatment of ADHD-

linked student issues, the relative absence of isolated inattention encourages caution in generalizing.

Accurate discovery of need to intervene was also limited in this study by availability of prior information to help contextualize initial observations. While this does not seem to be unique to the context of this study – most classroom teachers typically only experience a single school year with students – it is important in framing a vision for optimal treatment. While the schools involved in this study generally have a system in place to share important transitional information about their students, it does not reasonably represent an optimal context for communicating needs and prior treatment data year-to-year. The brief summary of this information provided to current teachers prior to starting the school year and the method of communication are both areas of improvement not explored in this study.

As a classroom teacher with 17 years experience, I have a unique connection to the study that is a source of bias. I have tried to minimize this effect as a researcher, but it is impossible to rule out the unavoidable existence of some sort of bias in qualitative research that may skew the data or its interpretation. I have made particular efforts to include the entire range of data gleaned from each participant without culling any particular or undesired type of information. While the collected data and the process of obtaining it are complex, I exercised the highest scientific virtues by maintaining a neutral viewpoint during the investigation. I was diligent in being highly engaged with the participants and with the process, while being disengaged from preconceptions or expectations.

Recommendations for Future Research

The results of this study are pertinent and timely for teachers and school districts across the nation currently reshaping and retooling their programs to the meet the needs of 21st Century

students in a new learning landscape. Historically, public education has centered on standardized curriculum through rote learning at a one-size-fits-all pace. As technology, career, and cultural contexts have evolved, students are struggling to learn within the traditional system because they are disengaged and lack motivation. Those struggling with ADHD-linked symptoms are acutely affected by this shift and distinguishing between individual executive functioning issues and an overall flaw in education design as causes of student struggles is difficult. Authentic learning experiences with real-world contexts that are student centered and geared toward their personal concerns, interests, and issues in their lives are needed for genuine engagement. These factors underlie the issues presented in this study and student inattention, hyperactivity, and impulsivity must be prominent in the discourse about reshaping and retooling public schools to meet the needs of 21st Century learners.

Ultimately, this study highlights the important consideration of teacher persistence and contributing motivational factors. The focus of future research, then, should be on how to increase teacher motivation and competence alongside developing informal supports within the school community. Elevating these functional areas to optimal levels will increase the persistent individualization of student support, which is key to effective educational solutions that can diminish reliance on an overreaching medical model. Similarly, ongoing support of teachers must include specific methods of screening students for executive functioning needs. “Because youth with attention difficulties may go unnoticed, unreferred, and untreated, brief screening measures that focus on (inattention) symptoms may provide a systematic method for detecting and addressing this serious risk” (Zoromski et al., 2015, p. 1251). Specifically, future research of this nature should focus on screening tools that help teachers pinpoint executive functioning

issues for the purpose of differentiated instruction, rather than for aiding medical diagnosis, which is current standard of practice.

Lastly, the findings in this study demonstrate a need for bolstering the conversation regarding the impact of teachers beyond standardized tests, which are not efficiently aligned to the vision and expected outcomes of 21st Century schools. An overreliance on extant teacher motivations as the primary operational energy to adapt practices to meet evolving student needs will leave more teachers burned out and ineffective. Future research should not only focus on the redesign of schools, but also on giving teachers more genuine opportunities to understand the positive impact they have on the growth and well-being of their students. There is compelling need to support the intrinsic and prosocial motivations of teachers while simultaneously providing more nuanced measures of student growth, beyond current standardized tests, that are more ideally reflective of the 21st Century skills we so dearly envision.

Appendix A: Timeline of Key Intervention Milestones

Timeline of Key Intervention Milestones

		Aug.		September		October		November		December		January		February		March		April		May																								
Week #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38						
Jamie - KG	D/I	EP			EP		A/I		EP		I		EP		S		Ongoing Maintenance																											
Carol - KG	D	EP	I	EP		X		A/I		EP		EP		I		EP		I		EP		S		Ongoing Maintenance																				
Julie - KG	D/I	EP			A		EP		A		EP		I		EP		Ongoing Maintenance (with limited student success)																											
Annette - KG	D/I	EP	I	I/A	EP	I	EP		I		EP		I		A		EP		A		EP		X		I		A		EP		I/A		I/A		S		Ongoing Adaptations							
Christine - 2nd Grade	D	EP	I	EP		A/I		Ongoing Adaptations												EP												Ongoing Maintenance												
Stephanie - 2nd Grade			D	I	A	I	EP	I	I	A	I	I	EP		M												I/A		EP		M		(with limited student success) ²											
Laura - 4th Grade	D/I	EP	I	EP	A	EP	A	EP	A	EP	A	I	EP	A	I	EP	A	A		EP		S		A		EP		A		M		A		M		A		M						
Patricia - 4th Grade	D	EP	I	I/A	I	EP	A	X	Ongoing Maintenance												I		M (with limited student success) ³																					
Martha - 4th Grade SPED	D/I	EP			R ¹		Ongoing Maintenance (with limited student success) ⁵																																					
Angela - 4th Grade SPED			D/I	EP		I		EP		Ongoing Maintenance (with limited student success) ⁵																																		
Katelin - 6th Grade SPED	D/I	EP	A	A	EP	A/I		EP		A		EP		A		EP		A		S ⁶		A		EP		Ongoing Maintenance ⁶																		
Lila - 8th Grade	D/I	EP	A	I	A	EP	A		EP		R ¹		Ongoing Maintenance																															

Teacher (alias) & Grade Level

¹ Referred for 504 evaluation, but parents stopped testing before its completion.

² Parents resistant to further evaluation or intensive interventions.

³ Parents opposed to medication, but set pediatrician appt. (Oct), but no results materialized.

⁴ Existing IEP unrelated to ADHD, but full re-evaluation led to ADHD-related supports.

⁵ Parents set pediatrician appt. No results materialized, but IEP annual update incorporated ADHD-related supports.

⁶ IEP annual update incorporated "executive functioning goal".

⁷ Parents requested 504 evaluation, which was executed within 6 weeks.

Symbol Key:

Intervention	Discovery of Need: D	Intervention Introduced: I
<p>Spinal cord:</p> <p>Discovery of Need: D</p> <p>Intervention Introduced: I</p>		

Evaluation Period: **EP**

Intervention Adaptation: **A**

Prevention Maintenance: **M**

Target Area Success: **\$**

X	R
Referral for Evaluation:	Referral for Evaluation:
Abandonment:	Abandonment:

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